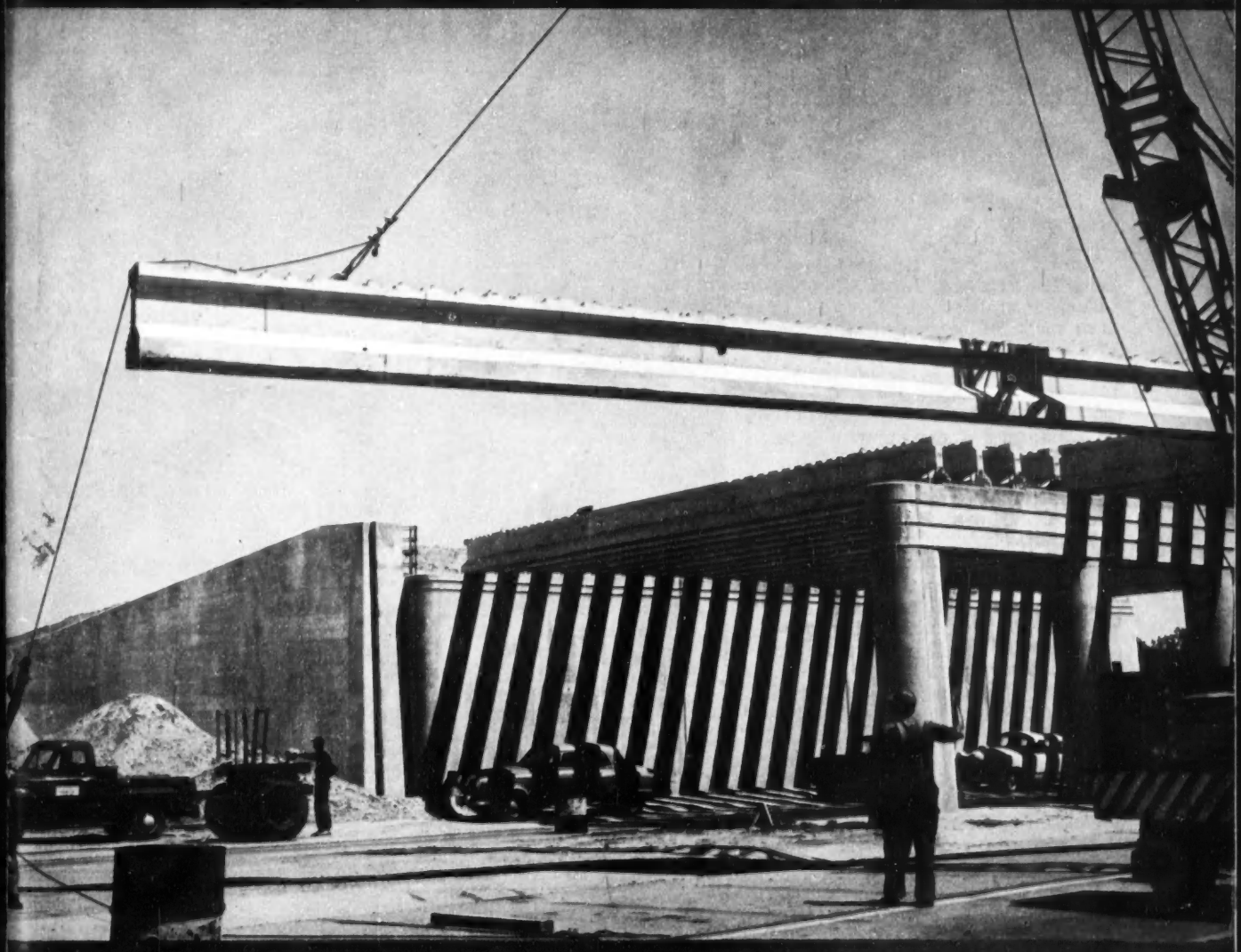
ENGINEERING NEWS-RECORD



UNIVERSITY MICROFILMS INC
313 N 1 ST
ANN ARBOR MI

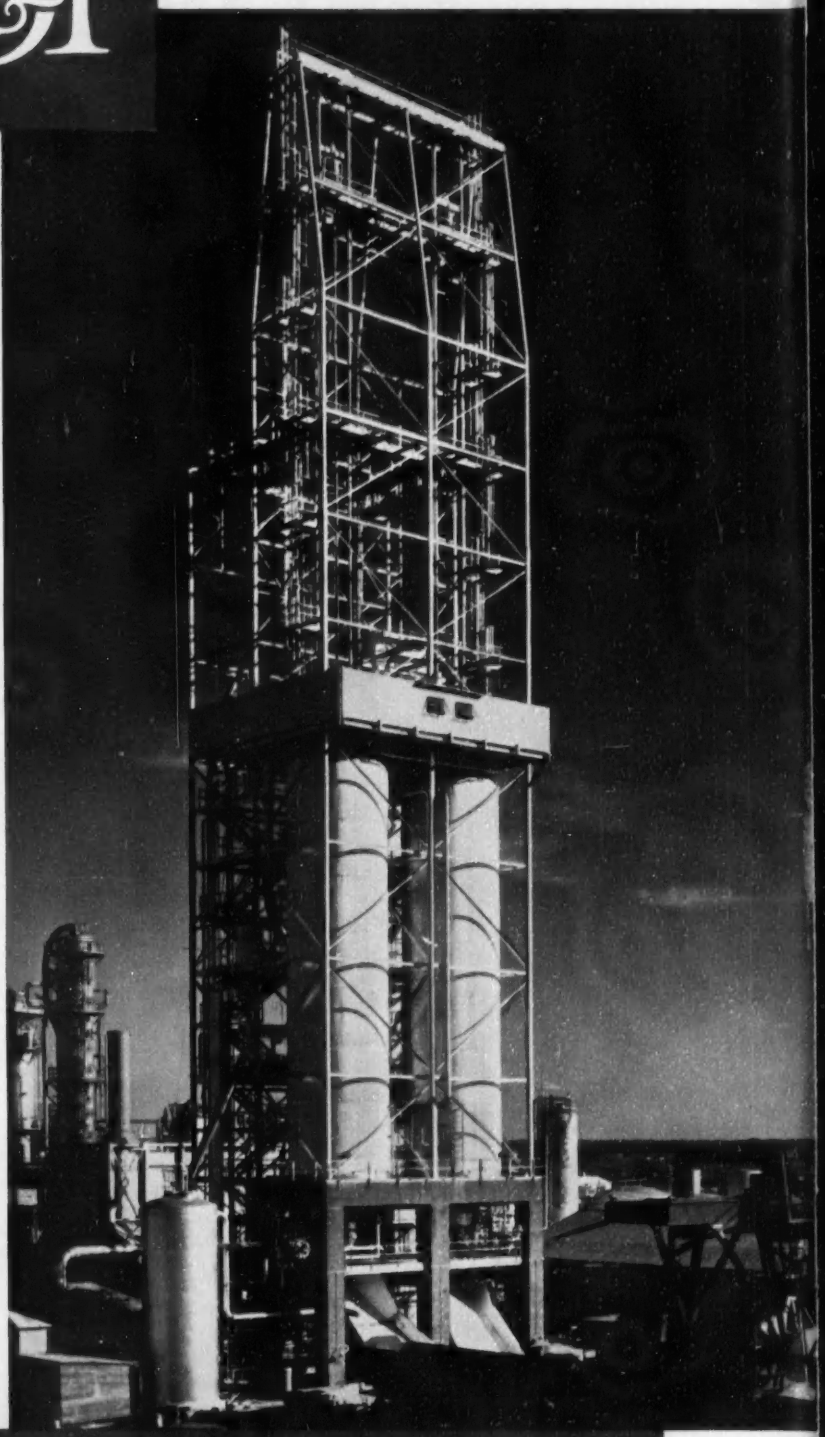
A McGRAW-HILL PUBLICATION

BUILDS STAINLESS LINED COKING CHAMBERS at McPherson, Kansas

Shown at right are two 16-ft. diameter by 65-ft. coking chambers built by Chicago Bridge & Iron Company for National Cooperative Refining Association at McPherson, Kansas. The vessels are made of carbon steel plates with Type 410 stainless lining on the inside, applied by the Unionmelt Process at our Birmingham, Alabama Plant.

Building refinery structures to engineering specifications takes years of experience and complete fabrication facilities. CB&I has both. Our four plants are equipped to handle almost any type of steel plate fabrication and erection.

Write our nearest office for estimates or quotations when planning new construction or improvements to existing structures. There is no obligation.



16-ft. diam. by 65-ft. stainless lined coking chambers erected by CB&I for National Cooperative Refining Association.

CHICAGO BRIDGE & IRON COMPANY

Atlanta, 3	2125 Healey Building	Detroit, 26	1506 Lafayette Building	Pittsburgh, 19	3212 Alcoa Building
Birmingham, 1	1520 North 50th Street	Houston, 2	2109 C & I Life Building	Salt Lake City 4	512 W. 17th So. Street
Boston 10	1012—201 Devonshire Street	Los Angeles, 17	1511 General Petroleum Building	San Francisco 4	1530—200 Bush Street
Chicago, 4	2101 McCormick Building	New York, 6	3311—165 Broadway Building	Seattle, 1	1312 Henry Building
Cleveland, 15	2201 Midland Building	Philadelphia, 3	1623—1700 Walnut St. Building	Tulsa, 3	1617 Hunt Building

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA. In Canada: HORTON STEEL WORKS LIMITED, FORT ERIE, ONT.

• **Spend less time loading, get big loads** . . . Allis-Chalmers Motor Scrapers have up to 20 horsepower for every yard of struck capacity — for fast loading. A curved bottom and offset cutting edge boils the dirt in *fast* . . . completely fills the bowl and packs yardage-robbing corner voids.

Here's why Allis-Chalmers Motor Scrapers give you

EXTRA YARDAGE ON EVERY SHIFT

Modern equipment helps cut your operating costs in today's competition. Let your Allis-Chalmers dealer demonstrate how the Motor Scraper actually saves time on every trip, gives you extra yardage every shift.

• **Spend less time traveling** . . . The equal division of weight between front and rear wheels, low center of gravity, high-traction tires plus four-wheel air brakes gives the operator confidence to run at top speeds. Foam rubber seat, finger-tip control, shock-free hydraulic steering and full visibility add safety and operator comfort, which pay off in greater output.

• **Spend less time dumping** . . . Positive, forced ejection "bulldozes" dirt out on the run, spots or spreads it right where you want it. Ejector rides on a three-point roller suspension . . . assures complete dumping of sticky loads. High apron opens to a big 8 ft, 6 in.

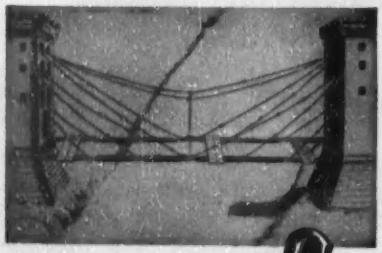
	Hp	Struck Cap. Yd	Heaped Cap. Yd	Wt. Lb
TS-300	280	14	18	47,900
TS-200	176	10	13	37,600

ALLIS-CHALMERS

TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

Verantius' Pons Ferreus

A SUSPENSION BRIDGE DESIGN
early seventeenth century



Engineering problems have been growing more and more complex in the past 300 years, and with them has grown the need for greater drafting precision. Since 1662, when the first Staedtler pencils were produced in Nurnberg, Germany, Staedtler has made constant improvements in pencil design and manufacture. Today, the Mars-Lumograph is America's finest imported drawing pencil; in the clutch pencil field the combination of the new 1001 Mars Technico push-button lead holder and 1904 Mars-Lumograph imported drawing leads insures your having the very best.

The 2886 Mars-Lumograph drawing pencil gives you precise thickness and the blackness of line needed for crisper, cleaner prints. Perfectly graded in 19 degrees: EXEXB to 9H. $1.50 per dozen—less in quantity.

The 1001 Technico Mars-Lumograph push-button lead holder costs no more than ordinary holders, has a noiseless, smooth-working, low-friction clutch mechanism, lightweight wood construction with perfect balance and, built into the push-button cap, a unique lead sharpener. $1.50 each—less in quantity.

1904 Mars-Lumograph Imported Drawing Leads are so opaque that inking-in is not necessary. Leads are ribbed for firm clutch grip and each has a removable cap which prevents sliding from holder. Available in 18 degrees; EXB to 9H. $1.20 per dozen—less in quantity.

J.S. STAEDTLER, INC.
27 DICAROLIS COURT
HACKENSACK, NEW JERSEY

ENGINEERING NEWS-RECORD

ABP Member

Editorial offices, 330 W. 42nd St., New York 36, N. Y.

Telephones: New York - LOngacre 4-3000; Chicago - WHitehall 4-7900; San Francisco - DOuglas 2-4600
Washington - REpublic 7-6630

Number of copies of this issue printed 64,021

CONTENTS ON PAGE 17

Waldo G. Bowman
Editor

E. E. Haimos Jr. ..... *Managing Editor*
J. J. Christie ..... *Asst. Managing Editor*
V. T. Boughton ..... *Transportation, Power*
F. S. Merritt ..... *Architectural, Structural*
R. H. Dodds ..... *Contracting, Heavy Construction*
S. C. Jensen ..... *Materials and Equipment*
A. J. Fox Jr. ..... *Hydraulics, Water Supply, Sanitation*
J. P. Chamberlain ..... *Business and Finance*
R. W. O'Neill ..... *Highways, International*
J. R. Owen ..... *Municipal*
J. R. Carr ..... *Midwest (Chicago)*
L. L. Wise ..... *West (San Francisco)*
N. A. Bowers ..... *Consultant (San Francisco)*
Elsie Eaves ..... *Business News Department*
J. H. Webber ..... *Economics*
J. A. Mahoney, M. O. Wetzel ..... *Construction Reports*
M. W. Roessler, E. R. Huber ..... *Statistics, Costs, Prices*
M. V. Leggiero ..... *Makeup*
B. J. Lamb, B. J. Bagley ..... *Rewrite, Copy*
L. T. Tarpey, J. C. Greenough ..... *Printing*

Washington News Bureau, Room 1189 National Press Building; G. B. Bryant, Jr., *Manager*, Glen Bayless, A. E. Adams, Jay Flocken, Boyd France, Sam Justice, Craig Lewis, D. O. Loomis, Jesse Mock, Gladys Montgomery, A. L. Moore, William Olcott, M. A. Relchek, Caroline Robertson, J. T. Skelly, V. B. Smith.

Domestic News Bureaus: Atlanta, 1321 Rhodes-Haverty Bldg., W. A. Kearns; **Cleveland,** 1510 Hanna Bldg., R. A. Cochran; **Detroit,** 856 Penobscot Bldg., J. C. Jones Jr.; **Houston,** 1303 Prudential Bldg., J. A. Lee; **San Francisco,** 68 Post Street, M. C. Ralston; **Los Angeles,** 1111 Wilshire Blvd., John Shinn, **Seattle,** 6040 Fifth Ave., N.E., Ray Bloomberg.

Correspondents: Albany, Albuquerque, Augusta, Me., Austin, Boston, Boulder, Baltimore, Birmingham, Bismarck, Charleston, (W. Va.), Charleston (S. C.), Columbus, Cincinnati, Cleveland, Chicago, Cheyenne, Dallas, Denver, Detroit, Durham, Harrisburg, Helena, Houston, Hartford, Indianapolis, Jackson, Miss., Jacksonville, Jefferson City, Kansas City (Mo.), Lansing, Lincoln, Little Rock, Miami, Memphis, Minneapolis, Montgomery, Milwaukee, New Orleans, Norfolk, Omaha, Oklahoma City, Philadelphia, Pittsburgh, Portland (Ore.), Providence, Phoenix, Pierre, St. Louis, Schenectady, Syracuse, St. Paul, Seattle, Salt Lake City, Spokane, Topeka, Trenton, Wilmington. **Canada:** Montreal, Toronto, Ottawa, Victoria, Regina.

Foreign News Bureaus: J. K. Van Denburg, Jr., **New York;** G. W. Schroeder, **Bonn;** Edward W. S. Hull, **London;** Herbert Leopold, **Manila;** John Wilhelm, **Mexico City;** John O. Coppock, **Paris;** A. W. Jessup, **Tokyo;** L. J. Holmes, **Sao Paulo. Correspondents:** Amsterdam, Athens, Bangkok, Bogota, Bombay, Brussels, Buenos Aires, Caracas, Copenhagen, Geneva, Havana, Helsinki, Johannesburg, Lima, Madrid, Melbourne, Oslo, Rome, Stockholm, Sydney, Tehran, and 21 other principal cities and countries.

Robert F. Boger
PUBLISHER

August 19, 1954 ENGINEERING NEWS-RECORD Vol. 153, No. 8

Member ABC and ABP

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. **Publication Office, 99-129 North Broadway, Albany 1, N. Y.**
Executive, Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N.Y. Donald C. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Senior Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.
Subscriptions: Address correspondence to Engineering News-Record—Subscription Service, 99-129 North Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.
Subscriptions are solicited only from persons with an identifiable commercial or professional interest in construction and building. Position and company connection must be indicated on subscription orders.
Single copies 25¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada $8.00 a year; $12.00 for two years; $16.00 for three years. Other Western Hemisphere and the Philippines, $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries, $20.00 a year; $30.00 for two years; $40.00 for three years. Entered as second class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of Mar. 3, 1879. Printed in U. S. A.

Copyright 1954 by McGraw-Hill Publishing Co., Inc.—All Rights Reserved.

*Wolmanized
LUMBER
a uniformly treated product
...alone combines these four major advantages

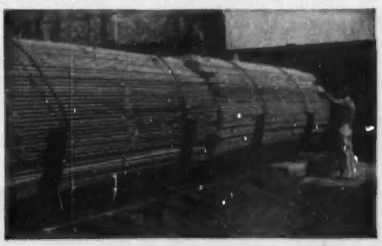
1 Uniform treatment The uniform, unvarying standards of treatment that are characteristic of Wolmanized clean pressure-treated lumber begin with the production of the preservative chemical itself. Controlled by a single exacting standard, Wolman brand preservative never deviates from its chemical formula. And the high-pressure treatment process by which Wolman salts, in solution, are driven deep into wood is also completely controlled, always the same. Retorts and other pressure-treatment equipment must meet strict Koppers requirements before a preserver is licensed to produce Wolmanized pressure-treated lumber. Since the preservative is forced deep into the fibers of the wood by pressures up to 150-p.s.i., equipment must have at least that capacity before approval is granted. Thus, from all 14 sources operating 24 pressure-treatment plants, Wolmanized clean treated lumber is always the same. Wherever you specify, use or buy Wolmanized lumber you are assured that uniform treatment is providing a product with undeviating quality.

2 Application versatility. Wherever you use treated lumber, Wolmanized lumber will fill your needs. In addition to the application versatility that has always been the hallmark of wood, Wolmanized lumber is deadly to rot and termites, clean, odorless, completely paintable, harmless to clothing and skin, and noncorrosive to metal fittings.

3 Available anywhere. 47% of all clean pressure-treated lumber is Wolmanized . . . nearly as much as the total output of all other sources combined. When you specify Wolmanized lumber, delivery is certain, since 24 qualified wood preserving plants in the United States and Canada provide coast-to-coast distribution.

4 Proved dependability. Dependability of Wolmanized lumber is documented by actual service records. Unusually long life, even under the most adverse conditions, is another advantage of Wolmanized pressure-treated lumber. For further information write: Koppers Company, Inc., Wolman Preservative Department, Pittsburgh 19, Pennsylvania.

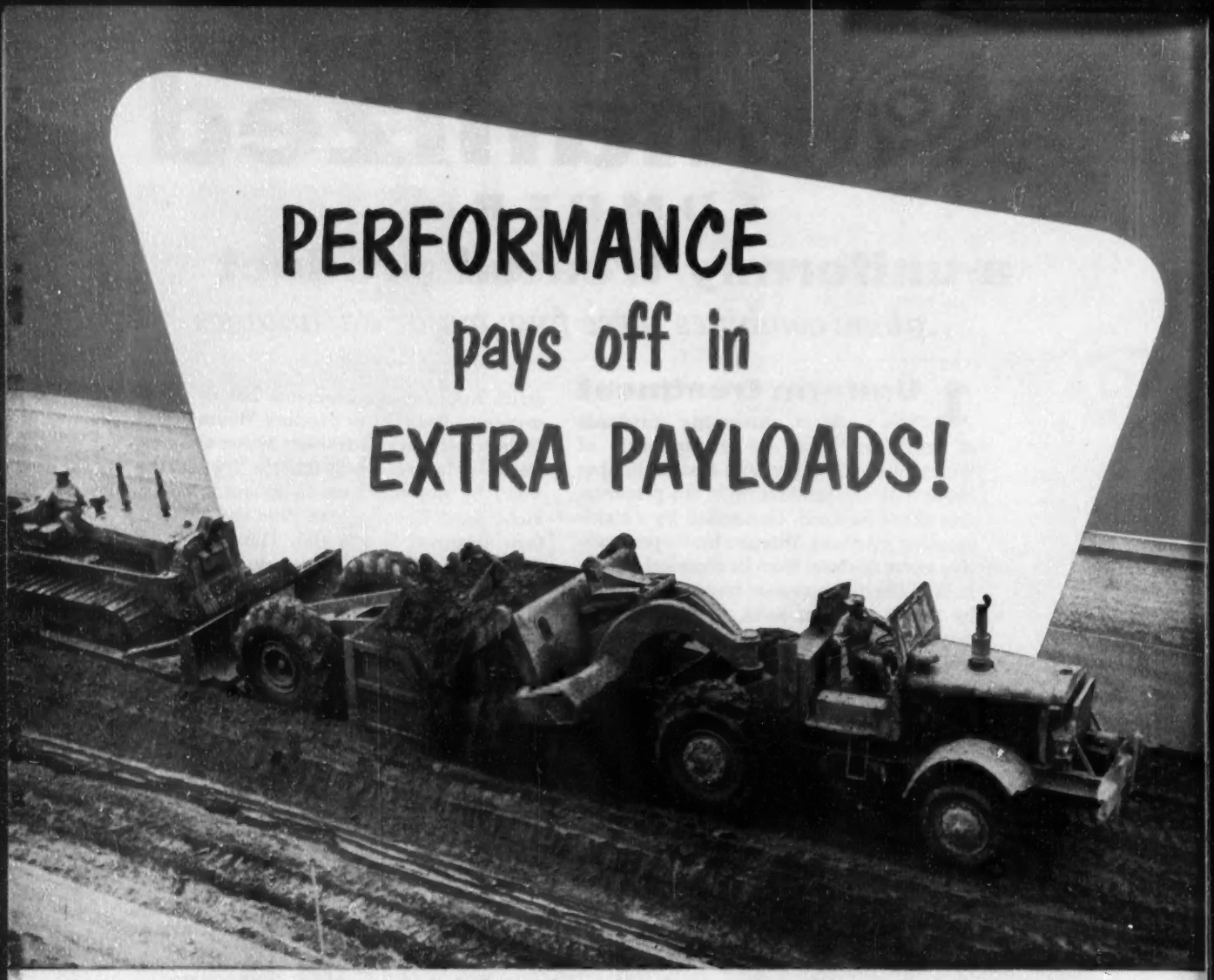
*"Wolman" and "Wolmanized" are registered trademarks of Koppers Company, Inc.



Pressure-Treated

Wolmanized
LUMBER

PERFORMANCE pays off in EXTRA PAYLOADS!



Picking up a heaped load of about 18 cu. yds. on a section of the Los Angeles Golden State Freeway. Contractor: Kuhn & Murphy.

EUCLID SCRAPERS have proved their high job availability and productive capacity on all kinds and sizes of jobs. They are the fastest growing scraper line in the industry and an important part of the profit picture for many leading contractors ... large and small.

Before you buy any scraper equipment, check with "Euc" owners about actual job performance ... yardage moved per day, and maintenance and operating cost — week by week — not just "paper" figures. You'll find "Euc" Scrapers are real money makers for owners because they get heaped, compacted loads easily, maintain fast travel speeds, dump and spread the load on the run — all adding up to more payloads per hour day after day. Have your Euclid Distributor give you all the facts soon.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Cable address: YUKLID Code: BENTLEY

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GM GENERAL MOTORS

Top Performance on the Toughest Jobs...Everywhere!

Dawson-Wade & Co. Ltd. have a tough 22-mile section of the Trans-Canada Highway near Golden, British Columbia. A "Euc" scraper is shown getting a heaped load of approximately 18 cu. yds. from a deep cut on this rough and rugged highway construction job.

One of two "Euc" Scrapers stripping overburden in a Fuller's Earth mine of Floridin Company, Quincy, Florida. This material is hauled 100 to 500 feet to a waste dump, from which it can be returned by the Scrapers to reclaim the land after the Fuller's Earth has been mined.

Amis-San Ore Co. used five "Euc" scrapers, a Loader and fleet of Bottom-Dumps on a 2¼ million yard runway construction and channel relocation job at Lincoln Air Force Base in Nebraska. Here a "Euc" 15.5 yard scraper, working on the channel relocation, is loaded with clay excavation for the 1¼ mile haul.

Four "Eucs" made the dirt fly as they averaged 2.6 minutes per round trip on this Ohio Turnpike job for W. T. Cook Const. Co. Although loading in hard, heavy clay, each "Euc" was heaped and away on the 1000 foot haul in less than a minute.

"Euc" scrapers picked up big loads in a hurry on this 12.9 mile section of the Garden State Parkway near Pleasantville, New Jersey for S. J. Groves & Sons, Minneapolis. "Euc" Loader and Bottom-Dumps were also used on this project.

Levelling a new park at Wellington, Dryden Construction Co. used the first "Euc" Twin-Power Scraper in New Zealand. Round trip haul was only 300 yds. but up-grades on the return trip were as much as 40%. The "Twin" spread loads of 24 cu. yds. in a gully and made the cycle in less than 2 minutes.

Contractor preference — *based on high production and low cost per yard moved* — **has made "Euc" Scrapers the fastest growing line in the field**

NOW

a new low-cost WINDROW LOADER

NOW—a new low-cost answer to windrow loading.

NOW—a Windrow Loader with a realistic capacity. Keeps ahead of all the trucks normally available.

NOW—a Windrow Loader with fast, easy maneuverability. No need to travel to an intersection to turn around. Turning radius: 8′-6″.

NOW—a Windrow Loader for year-round use. Handles snow in addition to other windrowed material.

Tractor mounted. New claw-action feeder with automatic release. Loads earth, etc., at 4 cu. yd. per min. Snow at 7 cu. yd. per min. Ten-foot discharge height. Eight-foot boom overhang. Self propelled at 10 m.p.h.

NOW—is the time to write for full information.

54-41-WL

Barber-Greene

AURORA, ILLINOIS, U.S.A.

BG

WRITE for INFORMATION

descriptive literature . . . sound movies

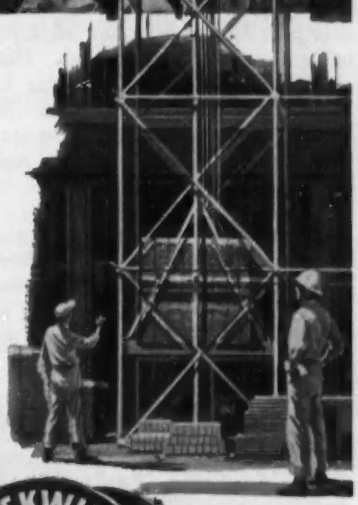
cost studies . . . nearby job inspection . . . plant layouts

MUSCLES OF STEEL
took the load off his back

Sweat and a strong back just aren't enough when it comes to meeting the stepped-up demands of modern construction work. Today's contractors and builders call on *muscles of steel*—sturdy wire rope—to lift and carry their heavy loads.

Supplying these *muscles of steel* to the giant that is American industry is our big job here at Wickwire—a job that has commanded our vigilant care and painstaking quality control for over half a century.

In the mines and the quarries. In the logging camps and the oil fields. On construction and highway projects. With the fishing fleets and in materials handling. Wherever wire rope is used, Wickwire Rope has earned an outstanding reputation for efficiency, utmost safety, long economical service and unfailing reliability.

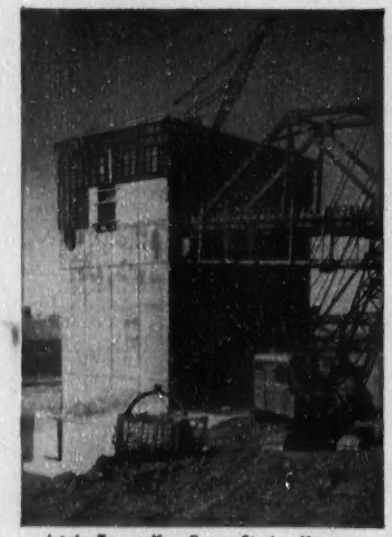


***every* industry benefits from wire rope**

WICKWIRE ROPE

CFI PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

2487



Intake Tower, Kaw Power Station, Kansas City, Kansas, R. G. Aldridge, Gen. Con.

Symons Forms On 64′ Tower

Symons forms are used for architectural concrete on exterior and for intricate form work on the interior. Many corbels, inserts, buttresses, ladders and other details required on this job. Engineering for all form work done without charge. This service enabled the contractor to get a clear picture of his job (its cost, bill of materials and labor saving methods). Our fieldman also gave regular on-the-job service.

Send plans for your next job and get complete layout and cost sheet —no obligation. Symons Forms, Shores and Column Clamps can be rented with purchase option. Paid rentals apply on purchase price.

Symons

SYMONS CLAMP & MFG. CO., Dept. H-4
4265 Diversey Ave., Chicago 39, Illinois

Please send information on items checked:
☐ Forms ☐ Shores ☐ Column Clamps

Name_____

Firm_____

Address_____

City_____ Zone_____ State_____

READER COMMENT

Financing construction equipment

SIR: You are to be congratulated for helping to call attention to the urgent need for more liberal depreciation allowances on construction equipment. We feel confident your editorial ("To Keep Construction Rolling", July 8, 1954, p. 156) will prompt manufacturers, distributors and contractors to present their views on the proposed legislation to their representatives in Congress.

As you pointed out, it is too seldom appreciated that American construction has made the impossible seem commonplace with the skilled use of vast amounts of modern machinery. However, we would like to call attention to one portion of your otherwise excellent and informative editorial. The statement that neither the finance companies nor the commercial banks has shown an overwhelming interest in financing construction equipment, we feel, is too all-inclusive and might well be misconstrued.

C.I.T. Corporation, the industrial financing subsidiary of C.I.T. Financial Corporation, has been financing construction machinery and equipment for many years and has more than $55 million outstanding in such equipment. Construction equipment, in fact, makes up the largest single segment of our industrial financing business and we are constantly seeking additional opportunities to expand in this field. C.I.T. Corporation serves equipment distributors and contractors throughout the nation, as was pointed out in your article "Industrial Finance Companies: They Keep Right on Growing" (ENR Oct. 29, 1953).

But faster depreciation added to these existing credit facilities would do much to strengthen the construction industry.

S. D. MADDOCK, PRESIDENT,
C.I.T. Corporation,
New York, N. Y.

EDITOR'S NOTE: There is no question but C.I.T. is doing an excellent job in construction equipment financing. The point of the editorial was that there are not enough C.I.T.'s and construction-conscious commercial banks.

Lump-sum bidding on roads

SIR: The half dozen states which are considering lump sum bidding for roads and bridges (ENR July 22, 1954 p 62) are trying to avoid responsibility and place more burden on the contractor. Their argument that there is a shortage of engineers should work against the lump sum bids, not for it. In effect they are saying that they are saving engineering time by making perhaps ten bidding contractors use two engineers each, a total of twenty engineers, rather than the state use two.

The lump sum bid would be an outright gamble unless more time than is customary is given the contractor for preparation. It will tend to eliminate essential changes in plans during construction, and can easily end by having the final payments for each project decided by court action. We maintain that the more pay items the better for all concerned.

E. T. FEDELI
General Superintendent
Campanella & Cardi Const. Co.
Hillsgrove, R. I.

History of shell design

SIR: The historical perspective of your report on the M.I.T. "thin-shell" conference (ENR July 1, p. 25) is somewhat distorted. The knowledge and utilization of the great carrying capacity of doubly curved surfaces are many centuries old. One-brick-thick network domes were built in a large variety of shapes before the general use of concrete thin-shells began in Europe after World War I. Published model tests and large actual structures built during the 1920's in Europe proved the correctness of the design methods.

It was not the lack of factual data and "know-how" that hindered the simultaneous development of thin-shell construction in the U. S., (which had the best equipped gunite industry of the world at that time) but the nonexistence of competitive opportunities and the consequent effectiveness of the resistance of the "engineer in charge" to any progress for personal convenience.

Even as late as 1937, when I designed a 200-ft diameter sphere for the New York World's Fair (Transactions ASCE, Vol. 106, p. 1431), the upper shell of this temporary structure had to be made twice as thick as those of existing structures with similar radius of curvature. Reference to imaginary "labor troubles" thus diminished the inherent great economy of this double curved shell design. The non existence of competition excluded the possibility for any reasonable comparison of the actual costs of the various

(*Continued on page 10*)

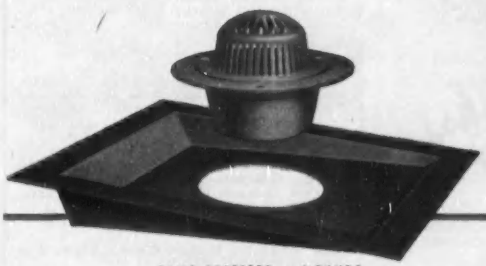
STEEL DECK...

BUILT-UP SADDLES ELIMINATED

Built-up saddles are eliminated in Steel Deck Roofs. Purlins can be set to create valleys at sump locations in the drainage area. Steel Deck can be warped to conform. No additional deck plates are required—no cutting, fitting or bending necessary.

Now Provides SAFEST ROOF at LOWEST OVER-ALL COST in any Locality!

New concept in roof construction adds to Steel Deck's may advantages over other types of deck material. New roof building methods provide effective safeguard against pitch seepage under extreme fire conditions. Now, more than ever before, Steel Deck stands out as the most practical deck material available for permanent, firesafe roof construction. Year after year, Steel Deck roofs a greater percentage of new construction. The reason for this is simple . . . the over-all cost of a Steel Deck roof is less than any other type of roof. Steel Deck's light weight, and the fact that it can be insulated to the exact degree to meet local requirements, permits substantial savings in the supporting structure—total dead roof load will prove to be less than any other type in any given locality. Mahon Steel Deck is available in Galvanized or Enamel Coated Steel . . . stiffening ribs are vertical—no angular or horizontal surfaces where troublesome dust may accumulate. In the enamel coating process, the metal is chemically cleaned, phosphated, and treated with a chromic acid solution to provide paint bond, and the protective coating of synthetic enamel is baked on at 350° F. prior to roll-forming. Consider these extra-value Mahon features. See Sweet's Files for complete information, or write for Catalog B-54-A.



SUMP RECESSES and SUMPS

Mahon Roof Sump Recesses for use with Mahon Steel Deck can be furnished to fit any roof pitch. Mahon Cast Iron Sumps can also be furnished for 4", 5", and 6" conductors.

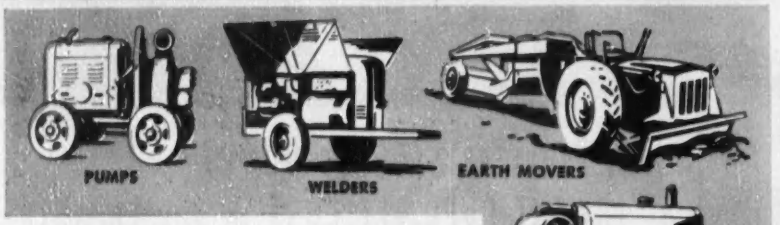
THE R. C. MAHON COMPANY

Detroit 34, Michigan • Chicago 4, Illinois • Representatives in all Principal Cities

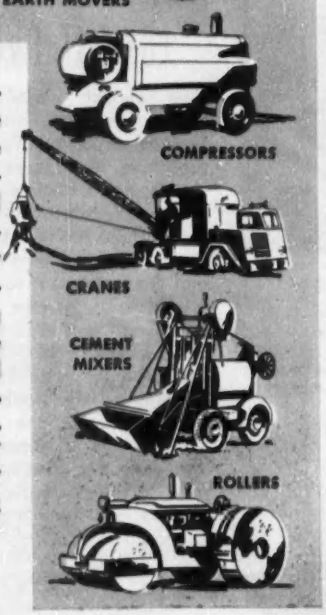
Manufacturers of Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms; Insulated Metal Walls of Aluminum, Stainless or Galvanized Steel; Insulated Metal Wall Panels; Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Shutters.

MAHON

Ingersoll-Rand GR-105 compressor, operating backfill tamper. Power—Continental Red Seal F-162.



Continental Red Seal power for specialized applications is now available at levels ranging from 2 hp up to more than 1,000, in liquid-cooled and air-cooled models, for use on all standard fuels. And, strictly on the score of *performance*—economy, dependability and low maintenance cost—it is finding its way into more and more leading makes of specialized machines. The equipment builder's good name, and the end-user's satisfaction, are double-clinched by this fact: EVERY CONTINENTAL RED SEAL IS NOT ONLY BUILT FOR ITS JOB, BUT BACKED BY PARTS AND SERVICE FACILITIES COAST TO COAST.



• • •

CONTINENTAL MOTORS ® Powerful as the Nation AMERICA'S STANDARD

1819 BROADWAY, NEW YORK 23, NEW YORK • 3817 S. SANTA FE AVE., LOS ANGELES 58, CALIF.
6210 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 510 S. BOSTON ST., ROOM 1008, TULSA, OKLA.
1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA.

Continental Motors Corporation
MUSKEGON, MICHIGAN

READER COMMENT

solutions of this problem. Possibility for bidding based on a free competitive shell design would have produced a notable structure at economic advantage.

Likewise, none of the obsolete contraptions built in this country since the end of World War II would occupy the sites of long-span bridges, if only a possibility for bidding with free competitive designs would exist.

LOUIS BALOG
Consulting Engineer
Binghamton, N. Y.

Twice the storage

SIR: In the "Des Moines Flood" story carried on page 24 of the July 1 issue, there was a typographical error in the acre feet of the flood control storage pool of the Saylorville reservoir. The correct storage figure should be 525,000 acre feet rather than 225,000 acre feet which appeared.

J. H. PEIL
Rock Island District
Acting Executive Assistant
Corps of Engineers

CALENDAR

National Council of State Boards of Engineering Examiners, annual meeting, Hotel Saint Paul, St. Paul, Minn., Aug. 26-28.

American Society of Civil Engineers, hydraulics division, annual convention, Austin, Texas, Driskill Hotel, Sept. 8-10.

National Highway Conference of County Engineers and Officials, ARBA, Deshler-Hilton Hotel, Columbus, Ohio, Sept. 13-15.

Illuminating Engineering Society, national technical conference, Chalfonte-Haddon Hall Hotel, Atlantic City, Sept. 13-17.

Western Association of State Highway Officials, Challenger Inn, Sun Valley, Idaho, Sept. 16-18.

Public Works Congress of the American Public Works Association, Claridge Hotel, Atlantic City, N. J., Sept. 19-22.

Society for Experimental Stress Analysis and International Congress and Exposition: Bellevue-Stratford Hotel, Philadelphia, Pa., Sept. 21-23.

Southeastern Association of State Highway Officials, annual meeting, Andrew Jackson Hotel, Nashville, Tenn., Sept. 28-30.

New England Water Works Assn., Poland Spring, Me., Oct. 4-6.

American Society of Civil Engineers, annual convention, Hotel Statler, New York, Oct. 18-22.

When you DESIGN and BUILD with STRUCTURAL STEEL your structures stay new!

Bridges, skyscrapers, institutions and industrial buildings designed with structural steel are built for the ages because the strength of steel is permanent and does not deteriorate under service loads and stresses.

Fort Pitt Bridge has specialized in the engineering, fabricating and erection of Structural Steel for over 57 years. Why not take advantage of our experience and facilities on your next construction job.

AISC
AMERICAN INSTITUTE OF STEEL CONSTRUCTION INC.
FOUNDED 1921

Fort Pitt

BRIDGE WORKS

Member American Institute of Steel Construction

General Offices, Pittsburgh, Pa.

Plant at Canonsburg, Pa.

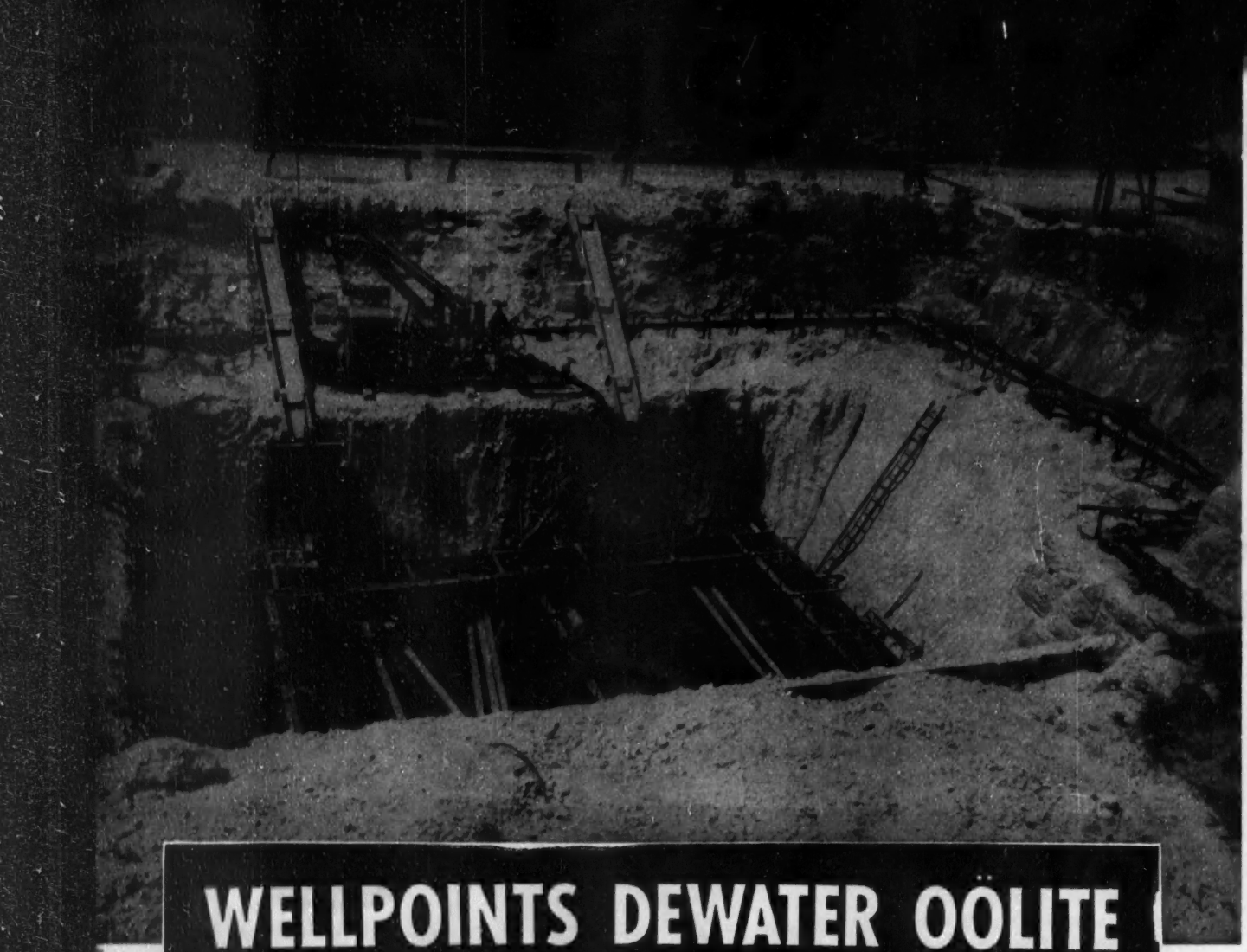
DISTRICT OFFICES

NEW YORK, N.Y. CLEVELAND, OHIO

DETROIT, MICHIGAN

★

Steel Permits Streamlining Construction with Safety, Endurance and Economy



WELLPOINTS DEWATER OÖLITE

What's Oölite?

Oölite is a rock consisting of small round grains cemented together. It looks like the roe of a fish.

In Key West, Fla., the oölite is a soft white rock composed mostly of calcium carbonate. Deep foundations in this material were avoided as much as possible because ground water at the surface and the oölitic limestone required expensive, tremie-sealed cofferdams for cuts of substantial depth.

When Powell Bros. Const. Co. of Ft. Lauderdale, were faced with the problem of excavating 22′ deep for a lift station, they decided, after conferring with us, to try wellpoints to remove 20′ of water from the oölite.

Six hours after pumping started, they started to excavate—in perfect safety—at a definite saving of time and money.

Ask our nearest office how to solve your pumping problem economically.

Catalog on request.

MORETRENCH CORPORATION

90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington

Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

an ACCO product

"How do you tell one wire rope from another? They all look the same to me."

"It's not easy, but during the 15 years I've been using wire rope I've learned this: Pick a good brand and stick to it. We decided on HAZARD Lay-Set Preformed which has a green strand for quick identification. HAZARD makes a complete line and their recommendation book tells us the constructions that will give us the best service. "HAZARD has good distributors wherever we operate and we can pick up what we need in a hurry."

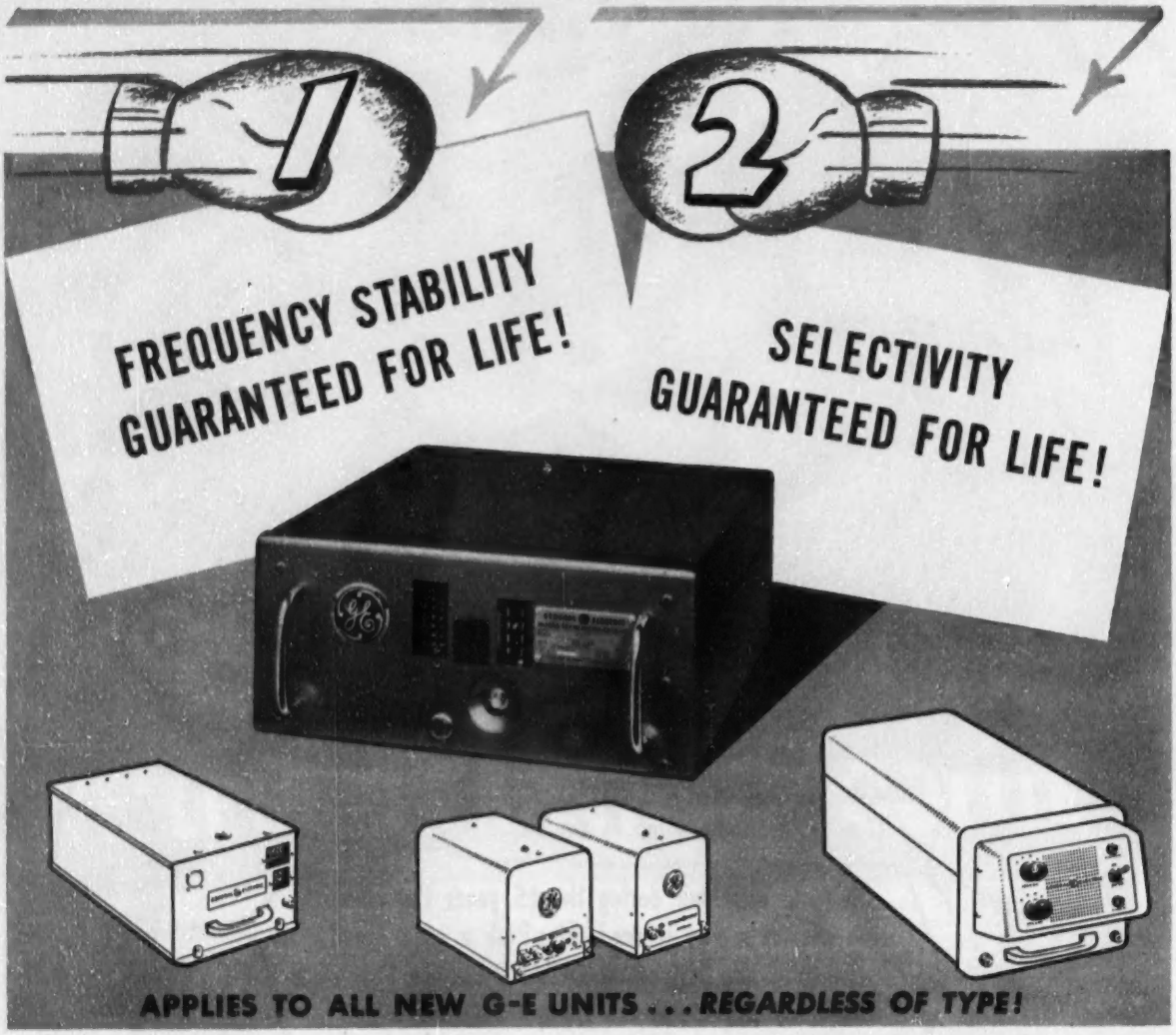
Get a free copy of No. 129-B HAZARD *"Wire Rope Recommendations for General Contractors."* See your nearby HAZARD distributor or write our Wilkes-Barre, Pa., office today.

ACCO Hazard Wire Rope Division
AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Bridgeport, Conn.

plus ACCO Registered Wire Rope Slings

GIVE YOUR 2-WAY RADIO SYSTEM


1
2
FREQUENCY STABILITY GUARANTEED FOR LIFE!
SELECTIVITY GUARANTEED FOR LIFE!
APPLIES TO ALL NEW G-E UNITS . . . REGARDLESS OF TYPE!

2-WAY MOBILE RADIO

HERE . . . and *only from General Electric* . . . you have today's most potent influence on mobile radio design. G.E. guarantees protection from two major causes of unpredictable 2-way radio performance!

Guaranteed Selectivity with new multi-coil IF transformers guards your system against interference 24 hours a day! *Guaranteed Frequency Stability* clearly interprets the superior value of G-E crystals. Both, go the lifetime limit!

Printed space just can't tell the whole story. You'll want it firsthand, so pick up the phone now . . . call the G-E Communications Counselor at a local sales office. Or, write to: *Section X2284-19, General Electric Co., Electronics Park, Syracuse, N. Y.*

Progress Is Our Most Important Product

GENERAL ELECTRIC

WELLMAN ENGINEERING

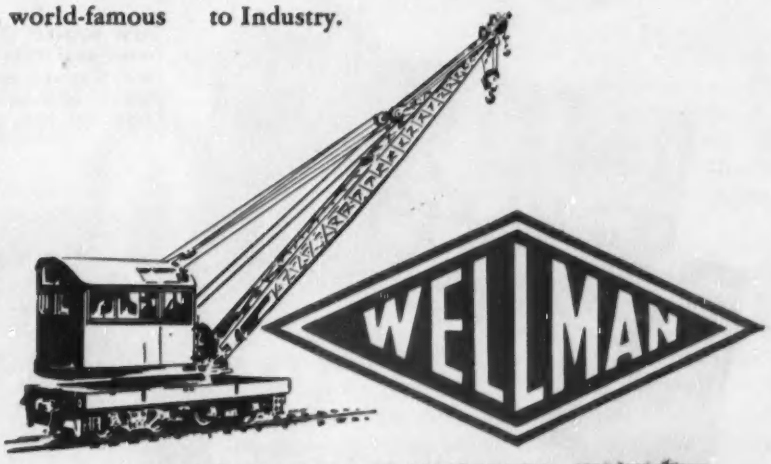
announces the acquisition of

BROWNING
Locomotive Cranes

TO further round out its line of heavy duty materials handling equipment, Wellman Engineering has purchased the Locomotive Crane Division of The Browning Crane & Shovel Company, Cleveland, Ohio. Modern diesel-powered Browning Locomotive Cranes . . . world-famous for their rugged design and speedy, efficient performance . . . join the long list of WELLMAN products for steel, shipping, transportation, utilities, construction and materials handling fields . . . all backed by 58 years of WELLMAN service to Industry.

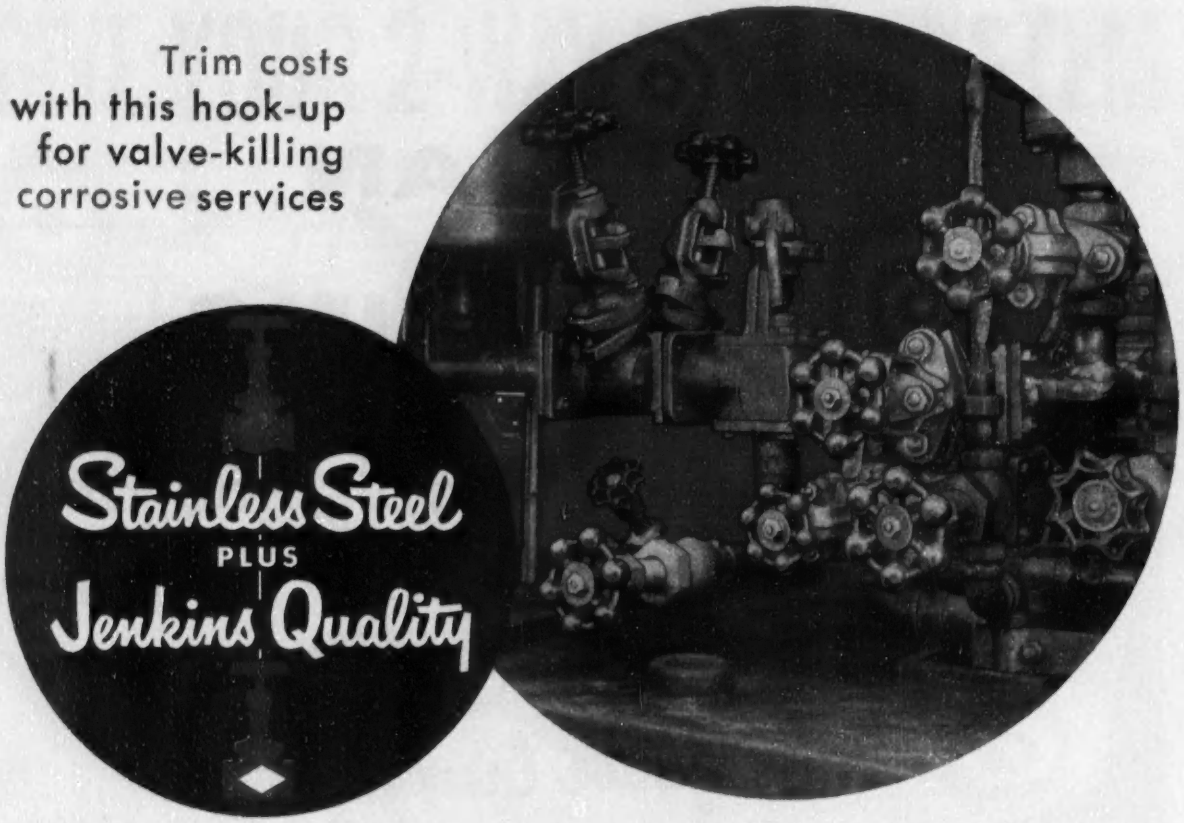
WELLMAN PRODUCTS

HULETT ORE UNLOADERS
UNLOADING TOWERS
SPECIAL-PURPOSE CRANES
COAL AND ORE BRIDGES
CAR DUMPERS
COKE OVEN MACHINERY
CHARGING MACHINES
FORGING MANIPULATORS
SOAKING PIT COVER CARRIAGES
GAS PRODUCERS
MINE HOISTS
SKIP HOISTS
CLAMSHELL, DRAGLINE BUCKETS
POWER CYLINDERS
and now—
LOCOMOTIVE CRANES



THE WELLMAN ENGINEERING COMPANY
7000 Central Avenue — Cleveland 4, Ohio, U.S.A.

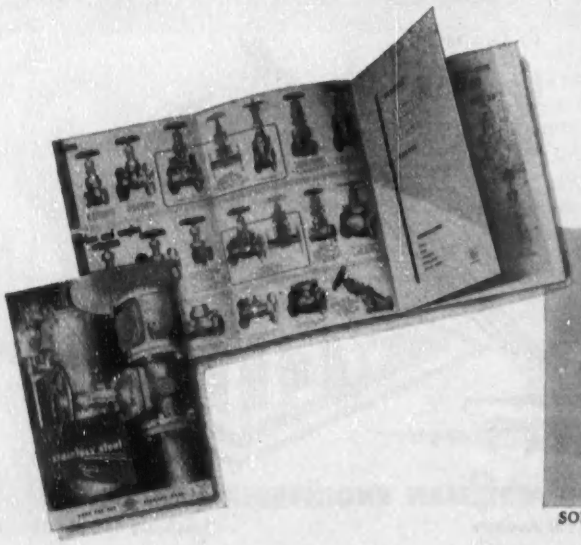
Trim costs
with this hook-up
for valve-killing
corrosive services



To end high valve mortality from most corrosive liquids, and to control fluids that must be kept free from contamination or discoloration, stainless steel is the right metal. But it takes more than metal to make a valve. For dependable performance, you need the two-way hookup — Stainless Steel *and* Jenkins time-proved Valve Engineering.

With the increased demand for processing equipment that resists corrosion, more and more Stainless Steel Valves have been added to the Jenkins line. It now includes types, designs, sizes and alloys to meet practically all industrial needs.

Let the famous Diamond trade-mark be your guide when you choose valves of stainless steel. As on *any* Jenkins Valve, it means *extra value* . . . longer, trouble-free service life.



NEW BOOKLET describes the wide range of types, sizes, pressures, and alloys available in Jenkins Stainless Steel Valves, with diagrams and dimensions. Includes description of alloys, helpful information on selection, and survey forms. Ask for Form 200. Jenkins Bros., 100 Park Ave., New York 17.

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES
SINCE 1864 TRADE JENKINS MARK
Jenkins Bros

SOLD THROUGH LEADING INDUSTRIAL DISTRIBUTORS EVERYWHERE

ENGINEERING NEWS-RECORD

Vol. 153, No. 8 Aug. 19, 1954

Number of copies of this issue printed: 64,021

CONTENTS

NATIONAL AFFAIRS

23 projects listed for lease-purchase 21
Military housing is hotly-debated issue 21
Alabama Power Co. sets sights on $130-million construction program 22
Site chosen for new Seattle bridge 23
Michigan announces tentative route for toll highway 24
Senate confirms Seaway officials 24
Survey report favors new Iowa toll highway 25
Chemical concerns to start research for soil stabilizer 25
Challenging construction jobs up North 26
Five workers killed in Koolau tunnel cave-in 27
Jobs in the news 27

LABOR

Ohio building trades see mine workers as threat ... 29
Joint board sets hearing on tilt-up dispute 29

FEATURES

Novel prestressing techniques for bridges 32
Kitimat workers will have a planned town 40
Fill laid fast with small diameter rollers 46
The latest in building codes 48

MUNICIPAL

Oakland Port Board clears airport project 53
Connecticut court orders city to build sewage plant .. 56
Study blames ozone for Los Angeles smog 58
Central distribution area to handle all Philadelphia foods 60
Kansas City puts curb on air conditioners 60
Passenger conveyor systems—solution to midtown parking problems? 63
Water board reports progress in clean-up of Ohio's River 64

INTERNATIONAL

Plaster precast in room-size units 67
Record hydro project plotted in Labrador's ore fields 69
Peru picks French firms to complete steel and power plants 69
India's Tungabhadra Dam, 1954 70

FIELD AND OFFICE

Chlorine rate computer: handy pocket tool 75
Economical pyramids control erosion 75
Rolling outrigger saves set-up time 82
Shoes remove paving fabric wrinkles 82

MEN AND JOBS

Jack A. Hutter, Kansas City's new traffic director 85
Col. L. E. Seeman named division engineer 85

BUSINESS AND FINANCE

CIMA works out financing plan to spur equipment exports 151
Clark Equipment's new leasing plan 151
Voluntary mortgage loan group starts to function .. 152
The longer look 154
Activity this week 155

NEW PRODUCTS

Plastic skylight installs easily 169
Bigger engines available for low-tonnage trucks 169
Automatic curber lays at 7½ FPM rate 172
New pencil markings resist oil and moisture 172
Bearing hanger increases versatility of PTO'S 172
German joint sealer withstands jet tests 174
Crane gives trucks dual purpose 176

Reader Comment 8
Calendar 10
Washington Observer ... 19
Books 93
Legal 108
Obituaries 113
Construction Reports .. 116
Unit Prices 150
Editorials 180

THE CONSTRUCTION WEEK

TOO COSTLY—Economics rule out a long dreamed of low-level railroad and highway that would run through the Laguna Mountains to link San Diego with the Imperial Valley in California. San Diego County interests got a negative recommendation on their pet project from the New York Engineering firm of Parsons, Brinkerhoff, Hall & Macdonald. The engineers studied two routes, one involving a 31-mi railroad tunnel, the other, running further south toward the Mexican border, a series of short tunnels for a highway route. Cost of a two-lane highway and of the rail line was estimated at $400 million each. Probable annual net revenue from tolls was put at $3 million, less than a quarter the amount needed for 40-year amortization. As a clincher: A 400% increase in rail tonnage would be needed to meet operating expenses.

FLORIDA PIKE TROUBLE?—Florida's trouble-beset plan for a turnpike from Hollywood to Fort Pierce is in for more trouble yet—if LeRoy Collins takes office as governor in January. And since Collins is Democratic nominee, there's little doubt he'll win.

Said Collins recently, after he had analyzed three engineering reports: overall cost ($89 million) is excessive; 2¾-in. paving thickness is unnecessary and extravagant; too much to be spent for eating and service areas; fencing will cost too much; toll, administration and other service buildings will cost too much; he doesn't like the location in a couple of instances.

KENTUCKY-OHIO PIKE OUT—And toll road supporters got another setback, when Ohio's Governor Frank Lausche reported that a proposed $100-million Cincinnati-Louisville turnpike won't work, economically.

Lausche said he and Governor Weatherby of Kentucky, had discussed engineering reports that showed the road wouldn't generate enough business to pay off the investment.

DAM AGAINST H-BOMB—Civil defense workers and engineers will be up against a nice problem Aug. 23, when a theoretical H-bomb destroys Coulee Dam.

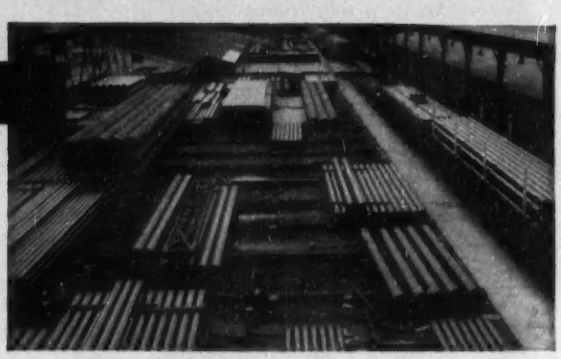
CD workers will have to figure a flood crest 63 ft higher than at the all-time record-flood of 1894; plus a parallel breakdown of virtually all the area's power.

NEW NORFOLK TUNNEL?—One of these days, there might be a third tunnel near Norfolk, Va.—where one traffic tube is already in operation and a second set to go under construction. (The existing tunnel connects with Portsmouth, the second will join the Virginia Peninsula to the city).

The third tube would connect the city with the eastern shore, replacing ferries. Backing the plan for the $23-million tube is Richard S. Holland, vice chairman of the Chesapeake Bay Ferry Commission.

With Armco Dredge Pipe it's easy to...

Get the size and lengths you need

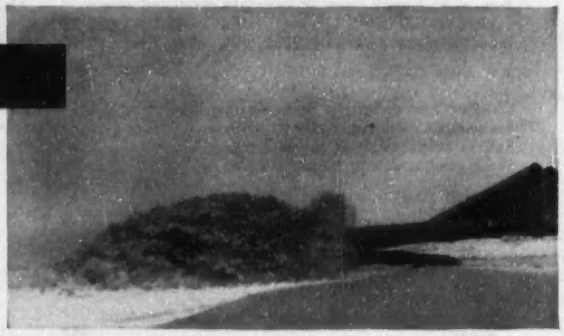


Wide range of diameters from 6 to 36 inches—wall thicknesses from ¼- to ½-inch. And you can specify exact lengths as your job requires.

Set up and dismantle quickly

Machine-reduced or -expanded ends in diameters from 6 to 28 inches make it easy to get tight joints with standard Armco Shore Pipe. Individual lengths can be disconnected and moved easily and quickly. Pipe ends are also supplied flanged for use with ball joints, and with half-oval bands for use with rubber sleeves for pontoon pipe. Special end preparation available as required.

Get low cost per unit of material carried



High abrasion resistance, high strength and high flow capacity assure efficient, low-cost operations with Armco Dredge Pipe. The Armco Special Analysis Metal combines toughness and hardness in a degree best suited to dredging. Hydrostatic tests on each pipe length assure ample strength to withstand high pumping pressures. The smooth interior, free from laps or other obstructions, provides a high flow capacity.

Write for complete information on Armco Special Analysis Dredge Pipe and its other money-saving uses in river and harbor work, hydraulic mining, and sand and gravel operations. Armco is ready to supply you with helpful, authoritative data, backed by almost 40 years' experience with dredge pipe requirements. Armco Drainage & Metal Products, Inc., Welded Pipe Sales Division, 4504 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO SPECIAL ANALYSIS DREDGE PIPE

WASHINGTON OBSERVER

First meeting of Hoover task force on federal real estate will be something in the middle of next month. They'll be investigating federal construction and operation of the government's huge real estate holdings—covering all its buildings around the country.

One of the biggest issues: the new lease-purchase program (see page 21). The Administration has gone heavily into this method of financing its needs for new government buildings. The Hoover group will have to decide whether the advantages outweigh the fact that the buildings do cost the taxpayer more.

They'll dig into military construction which is one of the areas where the group may find it can make many recommendations. They'll be looking into such things as duplication of agencies, activities and personnel. For example, overlapping by Navy's Bureau of Yards and Docks and Army's Corps of Engineers.

They'll look into possibility of standardizing service structures such as hospitals, housing, barracks, warehouses, and the like.

Chairman of the task force is John R. Lotz formerly of Stone and Webster, who has had several assignments studying government operations. The real property task force will be working under pressure to get its findings in shape for an interim report to Congress due the end of this year. Final report is due next spring.

•

New building is a pretty certain prospect in the wake of the Interstate Commerce Commission decision on so-called "piggy back" movement of freight. The commission has settled how trailer-on-flatcar service will be—and the railroads come out as the main carrier.

There should be more trucks on the road putting even more burden on present highway systems.

A lot more terminal space will be needed to handle the pickup and delivery by the railroads.

•

The ton-mile tax controversy has prompted a congressional inquiry into the whole gamut of highway revenue issues. The House Interstate Commerce Committee will do the investigation during the congressional adjournment.

Ohio's new tax and its fight with other states over reciprocity finally brought so much pressure from highway construction and user groups that the inquiry was ordered.

Finding money to pay for a new highway program will be one of the more important items coming out of the probe.

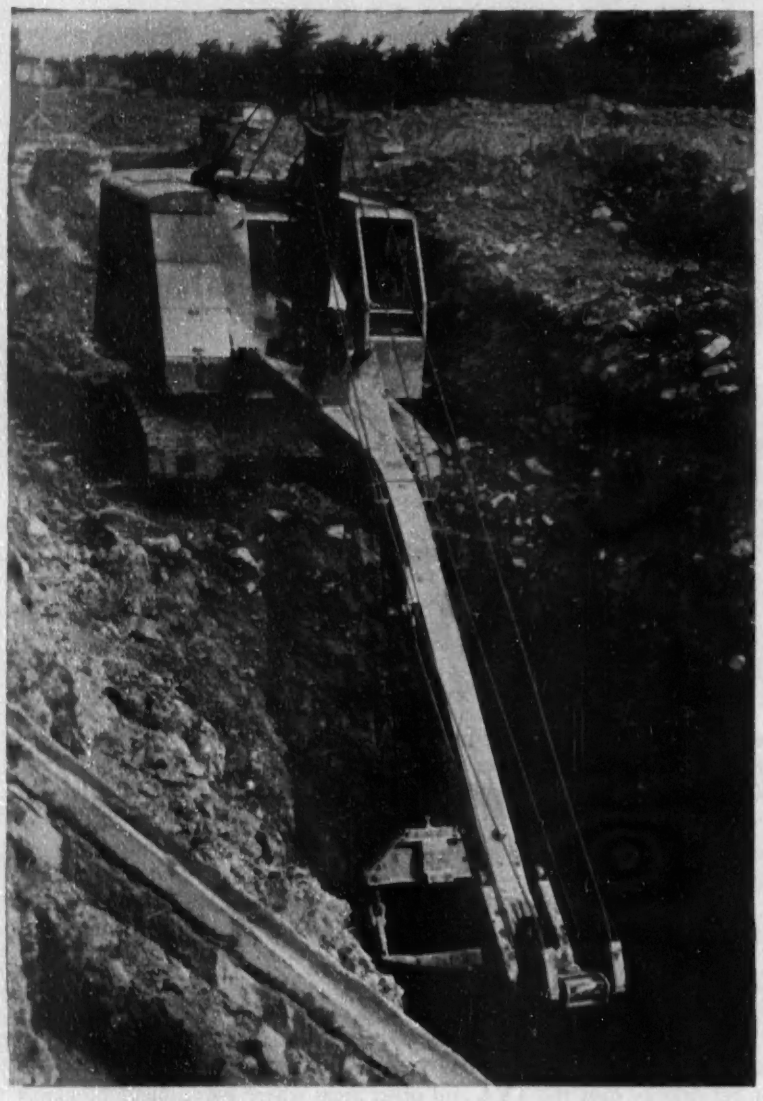
•

Atom power plants will be built first in areas where electricity is relatively high. They get priority over the TVA and other areas where government programs have brought the cost of power down. The AEC, which will do the licensing, will go slow on granting permits.

•

Up to $130 million of local money for airport construction will be unfrozen once Congress finally approves a $22-million federal grant, probably this week. States and cities holding money in reserve pending revival of federal aid will be able to let go once they know Washington is back in the game. Allocations, will be based on new rules that confine federal aid to major air terminals and then only for additional airstrip facilities.

How to get BIGGER output on BIG trench hoe jobs



K-370 DEEP-DIGGING TRENCH HOE DELIVERS MORE YARDS PER SHIFT. Sewer jobs like this are completed faster because dig-swing-dump cycles are much smoother. Operator has perfect "feel" of load as he operates conveniently located short throw Speed-o-Matic levers. Gooseneck hoe boom gives superior digging-dumping action.

12.823

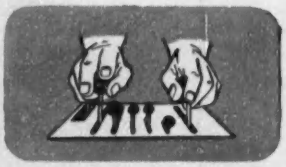
LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa

K-300 series machines offer extra capacity and power PLUS *Speed-o-Matic* control

FIELD reports show that outfits using K-300 rigs have a decided advantage in bidding and *getting* the BIG jobs—at a profit! *Greater output* does it!

Extra work capacity of K-300 rigs is a combination of many things. Speed-o-Matic power hydraulic control keeps operator far fresher, more alert all day. Means greater output—up to 25% more buckets delivered.

K-300's greater power (142 usable hp) speeds digging because it minimizes stalling, produces smoother swings. Add to this the stamina and more *"live weight"* that permit continuous operation under full power month after month. No wonder owners say the K-300 is the best producer money can buy! See your distributor or write for K-300 series literature now.



Speed-o-Matic is today's fastest, easiest-to-operate and most trouble-free control system. Now standard on *all* Link-Belt Speeders.

Note the size, weight and heft built into the working parts and structure. More "live" weight permits more efficient use of extra horsepower.

BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

LINK-BELT SPEEDER

23 projects listed for lease-purchase

New scheme for speeding construction of federal buildings gets underway

The federal government's new lease-purchase program got off to a fast start last week with approval of 23 building projects totaling $43.5 million by the House Public Works Committee. An OK by the Senate committee and the Budget Bureau will clear the projects for design and construction.

General Services Administration and the Post Office Department—the two government agencies concerned with the installment plan buying of buildings—will engage architect-engineer firms to prepare plans and specifications for all structures except four that are already in the design stage. On the basis of complete plans and specifications for each job, bids will then be invited from investor-builders to erect the structures and lease them to the government on long-term lease-purchase contracts. At the end of the contract term, the government becomes the owner of the building (ENR July 15, p. 25).

• **AEC building included**—Before the week is out, two other postal structures are due to be added to the House-approved list of 23 general purpose projects and post office buildings (see table below). The new candidates are $4,335,000 postal terminal annex at Denver, Colo., and a $465,000 post office garage at Atlanta, Ga.

The Senate Public Works Committee was expected to concur pretty closely with the action of its House counterpart. Only doubtful project was the new building to house the Atomic Energy Commission somewhere outside Washington, D. C., and that doubt had been pretty well resolved by AEC chairman Lewis L. Strauss in a closed session of the House committee.

• **GSA program well along**—First calls for investor-builder bids on lease-purchase contracts are likely to be based on three projects that the Public Buildings Service of GSA already has designed. Those three call for combination post office-courthouse buildings at Kansas City, Kan. ($3,415,000); Sharon, Pa. ($450,000) and Durham, N. H. ($395,000).

GSA aims to submit supplemental project lists for approval before the end of the fiscal year next June 30 that would boost the total of estimated building costs to $55 million.

• **Post Office sets standards**—The Post Office Department similarly could initiate lease-purchase contracts this year for about $30 million of new buildings. Efforts will be made to reach that goal and additional projects definitely are coming up but the department has doubts about getting that far in the next ten months.

Final policy of the department has not been set, but it definitely intends to engage private architects and engineers during the current fiscal year to draw plans and specifications for all its projects. That policy probably will be made permanent.

Standard plans and schematics have been developed by the Post Office Department for small structures in the 3,000-5,000 sq ft range, to fit typical sites. These plans would be furnished local architects as a guide in designing smaller buildings.

Projects submitted this year by both GSA and the Post Office are selected on a basis of urgency and permanency. Second consideration in the weeding-out process is the availability of sites.

Lease-purchase projects

General Services Administration:

Combined post office and courthouse at:	
Council Bluffs, Iowa	$2,005,000
Lake Charles, La	2,240,000
Green Bay, Wis	2,210,000
Bakersfield, Calif	2,699,000
Brunswick, Ga	1,125,000
Rock Island, Ill	2,111,000
Kansas City, Kan	3,415,000
Ann Arbor, Mich	1,850,000
Durham, N. H	395,000
Sharon, Pa	450,000
Gainsville, Tex	430,000
Abington, Va	725,000
Bluefield, W. Va	1,480,000
Miscellaneous structures:	
AE C building, Washington, D. C. area	9,600,000
Barge office building, New York	9,665,000
Custom, immigration station, West Palm Beach	262,000
Border station, Jackman, Me	355,000
Border station, Madawaska, Me	222,000
Border station, Brownsville, Tex	1,740,000
Total	$42,979,000

Post Office Department

Post offices at:	
St. Marys, Ohio	$2,500
Point Pleasant, N. J	68,750
Oxford, Pa	65,000
East New York station, Brooklyn, N. Y	270,000
Total	$486,250

Military housing is hotly debated issue

Wherry project sponsors spearhead fight against outlay of federal funds

This Congress, now in its final days, has failed to give a clear-cut answer to the hotly debated question whether housing on military posts should be publicly or privately financed.

Private housing advocates have made a strong last-ditch fight against the Eisenhower Administration's request for $350 million for government-financed housing. As a result, Senate-House conferees were expected to settle this week for an authorization of only about $175 million and much less in new money.

Sponsors of private housing projects —joined together in the year-old Wherry Act Housing Assn.—have been supplying ammunition for the attack on the Defense Department's $350-million request that has been waged by economy leaders in both houses of Congress.

• **The case for private housing**—Since 1949, when the Wherry Act became part of the National Housing Law, private sponsors have completed more than 66,000 Wherry Act Housing units for military families. Adding units under construction and commitment, Wherry housing owners state they have assumed the risks on 78,000 such units.

Wherry housing has been aided by 90% FHA mortgage insurance and by a government market for the paper in the Federal National Mortgage Assn. (Fanny May). Congress at this session extended the Wherry program for another year—despite suspicions directed at some past projects by the Senate Banking Committee, which is investigating housing abuses.

Opponents of the Administration plan for military housing call it an unnecessary federal expense—using government funds for construction that could be done better by private capital. Tied in with that point is criticism of the Administration for departing from its policy of getting the government out of business, letting private enterprise do the job.

• **Military pleads emergency**—Owners of Wherry projects see the new military housing program as a threat to

(Continued on page 22)

. . . Military housing

their present investments—and possibly as a Defense Department decision to abandon the Wherry program. Military people and the Armed Services Committees of Congress deny both charges. They say the new housing authorization aims only at a quick and partial answer to a desperate need and that it is carefully drafted to avoid hurting Wherry housing. The Wherry program, they claim, will be used to the limit—along with other available programs—to supply needed military housing.

In fact, they call the pending measures a temporary stopgap to serve only until a comprehensive military housing program can be worked out. Such a program might change the rules for Wherry housing in the future, but the armed services people don't foresee any withdrawal of government support for that kind of housing.

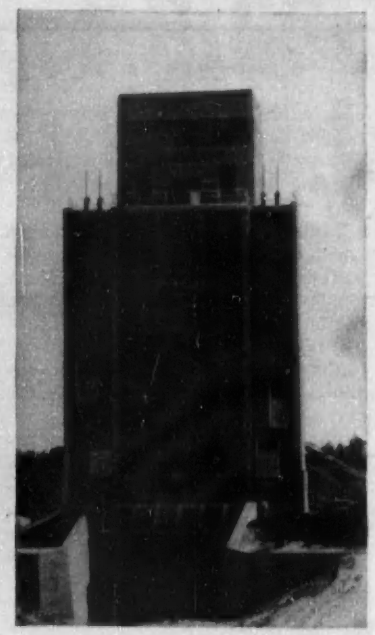
• **150,000 units needed**—Congress has made the new authorization much tighter than the Administration first requested. The bill specifies the number of units for each location and the maximum cost. In all, the measure authorizes less than 14,000 units, nearly all of them for junior officers and enlisted men.

Wherry sponsors point out, however, that more than 2,000 of the new units are for posts that already have Wherry projects. And the authorized costs average more than $14,000 per unit, as compared with $9,000 for Wherry housing—or $10,000 in high-cost areas—plus $1,500 subsidy per unit by the military for utilities and community facilities where necessary.

But the military people say that cost of new units would be recovered completely in 14 years through savings in quarters allowances that servicemen otherwise get to house their families. And the present bill, they claim, takes care of less than 10% of the standing need for 150,000 units of family housing.

• **Matter of interpretation**—Wherry owners, however, bring up some figures to substantiate their fears about the military's plans for use of privately built projects. In the six months from January through June 1953, military applications for Wherry units averaged nearly 2,150 a month. During the next twelve months the average dropped to just under 300 units a month, with a big chunk coming last June when more than 1,400 were asked.

Neither FHA nor the military see anything sinister in those figures. The decline came at a time when the Defense Department was taking its new look at the defense program.



Choose your level

Outlet structure of the big earthwork dam at the Garza-Little Elm Reservoir, northwest of Dallas, Texas (ENR Nov. 12, 1953, p. 45), features sluice gates located at various levels to permit selective drawing of water from the reservoir. The gates are 60x84 in. and operate under heads of 25 to 48 ft. They are the rising stem type with top, bottom and side wedges to insure positive seating. They control flow of water from reservoir to city of Dallas.

Tentative route selected for new Ohio toll highway

Ohio Highway Director Samuel O. Linzell has recommended a tentative route for the proposed north-south turnpike connecting Cincinnati, on the Ohio River, and Conneaut, near Lake Erie in the northeast corner of the state.

The tentative route for the $500-million project runs slightly north of Columbus and well east of Cleveland's metropolitan district. A spur to Toledo would break off from the main route some 10 mi northwest of Columbus. The turnpike, including the Toledo branch, would cover 410 mi and include 25 interchanges.

Preliminary engineering surveys for the proposed toll road route were made by J. E. Greiner Co. of Baltimore. Traffic and revenue studies now are being made by the New York engineering firm of Coverdale & Colpitts and may be completed by the end of this month.

The final route will not be pinpointed until further surveys have been completed.

Big hydro expansion

Alabama Power Co. asks FPC permission to build $130 million of facilities

Alabama Power Co. has set its sights on a $130 million construction program to boost its output of hydroelectric power.

In addition to the $100 million the company plans to spend on five multipurpose dams on the Coosa River, it has requested permission from Federal Power Commission to build a large dam and power plants on the Warrior River near New Hope, Ala., at an estimated cost of about $30 million.

FPC already has granted the company a two-year preliminary permit for the five Coosa River dams. This permit is not a construction authorization, but is a step in that direction.

The Coosa River development would have an initial installed capacity of 238,500 kw. It would supply electric power to Alabama, Georgia, Florida and Mississippi. Congress recently passed legislation to make possible participation by private interests in Coosa River development (ENR July 15, p. 21).

In its latest application filed with FPC the company asked permission to build a multi-purpose dam near New Hope on the Slipsey Fork of the Warrior River and a power plant at the existing dam of the United States at Lock 17 on the river.

Both these projects have been recommended by the Chief of Engineers for construction with funds of the federal government, but Congress has not appropriated the money for the work.

Alabama Power Co., in its application, asked permission to install electric power generating facilities at both locations in case the projects are carried out with federal appropriations.

Should no federal funds become available, the company suggested it be allowed to try to work out an arrangement for sharing the cost of the projects with all the other parties interested in the case.

The proposed dam would include major flood control features. It also would provide a regulated flow of water in navigation channels from the mouth of the Slipsey Fork to the city of Mobile. Water impounded by the dam could be used, in addition, for condensing and cooling at the company's steam plant at Gorgas.

These projects require approval of the Chief of Engineers, the FPC and the Alabama Public Service Commission. Construction would continue over three to four years.

Engineer bids out

Ontario withdraws call for bids on engineering work on harbor bridge

Plans of the Ontario Department of Highways to take bids for engineering work on a large bridge over the Burlington Channel at the entrance of Hamilton Harbor (ENR July 15, p. 25) have been abandoned.

Announcement of the plan brought a vigorous protest to M. A. Elson, deputy minister of highways in Ontario, from the Ontario Association of Professional Engineers. As a result of conferences between representatives of the association and Mr. Elson, the bid call was withdrawn and consultants from a selected list were invited to submit proposals for the design work on the bridge and supervision of construction.

Contract for the engineering work now has been let to P. L. Pratley, consulting engineer, Montreal, with whom is associated the Foundation Engineering Company, also of Montreal, a recently formed subsidiary of the Foundation Company of Canada. The latter company has announced that it will not bid on the bridge contracts since its engineering affiliate is participating in the design.

The bridge project, including approaches and access roads, has a length of five miles. The main span will have a clearance of 120 ft over the channel. Design work is expected to take seven or eight months. Construction will require about three years. Estimated cost is $12.6 million to $15 million.

California utility decides on sea water evaporators

The new $44-million steam-electric generating plant of Pacific Gas and Electric Co., now under construction at Morro Bay, California, will use two sets of sea water evaporators to produce fresh water for boiler operations.

This is believed to be the first industrial application of ocean water distillation in the nation although the process is common aboard ships.

Each of the two giant boilers in the new 300,000 kw power plant will be served by one set of evaporators. Designed by engineers of PG&E and of the Bechtel Corporation, contractor for the plant, each set will consist of three horizontally mounted cylindrical tanks, 17 ft long and 6 ft in diameter, with 290 one-inch tubes set ¾ in. apart in the lower half of each tank through which the sea water will pass. Production capacity of each set is estimated at 50 gpm or 72,000 gpd.

Army heliport nearly completed

The world's first heliport—an airport designed specifically for helicopters—is scheduled for completion at Fort Eustis, Va., on Oct. 5. Two crossing asphalt runways are only 600 ft long and 90 ft wide. They form spokes in wheel that is completed by a circular taxiway. Across the front of the buildings is a 750-ft asphalt ramp to be used as a helicopter parking area. Brig. Gen. Frank S. Bessen, Jr., Commanding General of the Army's Transportation Training Command, said the installation is the first of its kind in the world. The McKoy-Helgerson Co., of Greenville, S. C., is the contractor on this $970,000 heliport project.

Site chosen for new Seattle bridge

The Navy has rejected a plan which would have allowed construction of a bridge across Lake Washington east of Seattle at Sand Point. An alternative route has been designated by the Washington State Toll Bridge Authority.

Location of the Seattle terminus of the bridge at the Sand Point Naval Air Station would have necessitated a tunnel under a runway. To overcome the Navy's objection that construction of the tunnel would interfere with use of the runway, Seattle engineers came up with a novel plan to extend the runway with the concrete pontoons that would later form the bridge. (ENR July 22, p. 23). But the Navy turned down this plan.

The newly designated route extends from Madison Park in Seattle, about a mile south of Sand Point, to Evergreen Point on the eastern shore of the lake. It is several miles north of the lake's first bridge, built in 1940.

Seattle approaches to the new bridge, scheduled for completion by 1957, will tie in with a proposed north-south freeway and a new Montlake bridge across the ship canal extending from Lake Washington to Lake Union. A survey is under way to determine how much traffic will be using the freeway extending through Seattle from Everett to Tacoma.

Design drawings for the bridge are virtually complete, according to Charles Andrew, chief consulting engineer for the authority, and detailed work will begin immediately on maps of routes for the approaches.

The cost of constructing the bridge is estimated at $19 million and will be financed by revenue bonds.

Boring of new water tunnel begun in southern California

Construction of southern California's Metropolitan Water District San Juan tunnel was started last week in Riverside and Orange Counties.

The San Juan bore—6,795 ft long, 10 ft in diameter—is another major link in the current $52-million expansion program of the water district for delivery of California's share of Colorado River water to the area. It is one of the two links in the "lower feeder" now being added to the aqueduct distribution system and will help deliver water to the next 4,000,000 persons who come to live in southern California.

Michigan announces tentative route for 175-mi north-south toll highway

Michigan's Turnpike Authority has announced a tentative route for the state's first toll highway. J. E. Greiner Co., Baltimore consulting engineers, drafted the tentative route which begins just outside Toledo, Ohio, and skirts the population centers of Detroit, Pontiac, Flint, Saginaw and Bay City.

Price tag for the 175-mi toll road will be at least $225,719,000, not including planning costs. Right-of-way land alone is estimated to cost about $12 million.

A traffic report currently being prepared by New York consulting engineers Coverdale and Colpitts will be submitted to the authority early next month. When that survey is finished, the authority hopes to be able to establish a definite route for the superhighway.

Members of the authority admit that the traffic survey may show sections of the proposed route to be financially impractical. In that event, the route probably will be shortened considerably.

Present plans, however, call for a divided highway, two lanes wide in each direction, with 14 entrance-exit points. The route has been broken into four sections:

Sylvania (near Toledo) to Flat Rock —33.1 mi at an estimated cost of $38,288,000.

Flat Rock past Detroit to Flint—93.8 mi for $131,626,000.

Flint to a bypass around Saginaw—20.8 mi for $22,668,000.

Saginaw to Kawkawlin (near Bay City)—27.5 mi for $33,137,000.

The authority will meet Sept. 20 or earlier to review both the Greiner and Coverdale & Colpitts reports with financial advisers. Assuming all reports are favorable, highway design, construction and route plans will be finalized and bonds sold in 1955. Construction will run through 1956, 1957.

The authority is temporarily financed with a $500,000 grant from the State Highway Department. The money is available only for planning work on the Toledo-Detroit-Bay City road and must be repaid when bonds are sold. Plans for a Detroit-Chicago turnpike, estimated to cost $210 million, will be studied later.

Ceramic blocks tested on runways

A test installation of ceramic blocks as a surfacing material for airfield runways subjected to the heat and blast from jet engines has been made at Blumenthal Field, Wilmington, N. C., a Navy installation.

The blocks, which are 8x8x4 in. have been laid on a 16x60-ft section of a warm-up area, according to the July issue of Brick & Clay Record. Blocks are spaced ¾-in. apart in each direction. Reinforcing bars of ¾-in. diameter were placed in the joints in each direction before grouting; and after the grout had been spread over the entire area, vitrators were used to consolidate the surface. This was followed by a burlap drag and a layer of damp sand for curing.

Three types of base were used. One was simply a one-inch leveling course of sand (1 part hydrated lime to 9 parts sand) laid directly on the subgrade. The second was the same sand layer on a 4-in subbase of gravel, and the third had an 8-in. gravel subbase. This was done to determine the load-bearing value of the reinforced surfacing.

The test was sponsored by Brick and Tile Service, Inc., an association of brick manufacturers in North Carolina. The reinforced surfacing was designed by Emmett Poston of the Poston Brick and Concrete Products Co., Springfield, Ill.

Seaway officials

Senate confirms engineer as Deputy Administrator of St. Lawrence Seaway

Martin O. Oettershagen, Chicago engineer who has been confirmed by the Senate as Deputy Administrator of the St. Lawrence Seaway Development Corp., believes the Seaway will make Chicago and other Great Lakes cities into major ports.

President Eisenhower's appointee to the new $16,000 a year post has been engineer in charge of Chicago's Bureau of Rivers and Harbors since 1925. He also is consultant to the Chicago Regional Port Authority and is co-author of a recent report for the agency entitled "Where Two Great Waterways Meet."

Oettershagen has been active in planning for Chicago's proposed $25-million port development program. The projected new port facilities will be located along Lake Calumet on Chicago's South Side, which connects with Lake Michigan and the Illinois inland waterway system by the Calumet River and Calumet-Sag Channel.

This port development program and construction of the St. Lawrence Seaway will bring 1,000 or more ocean-going freighters into Chicago every year, Oettershagen is convinced.

The Senate also confirmed the five-man board nominated by President Eisenhower to serve as advisors to the St. Lawrence Seaway Development Corp. Members of this board are John C. Beukema, Michigan Republican who is vice president and director of the Muskegon Federal Savings and Loan Assn.; Henry C. Brockel, Wisconsin Republican who is Milwaukee's Municipal Port Director; Edward J. Noble, Connecticut Republican who is board chairman of American Broadcasting Co.; Kenneth M. Lloyd, Ohio Democrat who is legal counsel and secretary of the Mahoning Valley Industrial Council; and Hugh Moore, Pennsylvania Democrat, board chairman of Dixie Cup Co.

Iowa toll highway

Survey report favors new 297-mile, $180-million cross-state turnpike

Iowa is moving ahead with plans for a $180-million east-west toll highway to run 297.7 mi across the state from Davenport to Council Bluffs.

The Iowa Highway Commission issued a report finding that the proposed toll road "appears to be economically feasible by Jan. 1, 1959, if revenue bonds can be issued and sold at an annual interest rate of 3.5%."

The report recommended that the state legislature create a state toll road authority, separate from the State Highway Commission, to carry out and administer the turnpike project.

Political leaders of both parties predicted legislation to create such a toll road authority would be enacted by the 1955 Iowa Legislature.

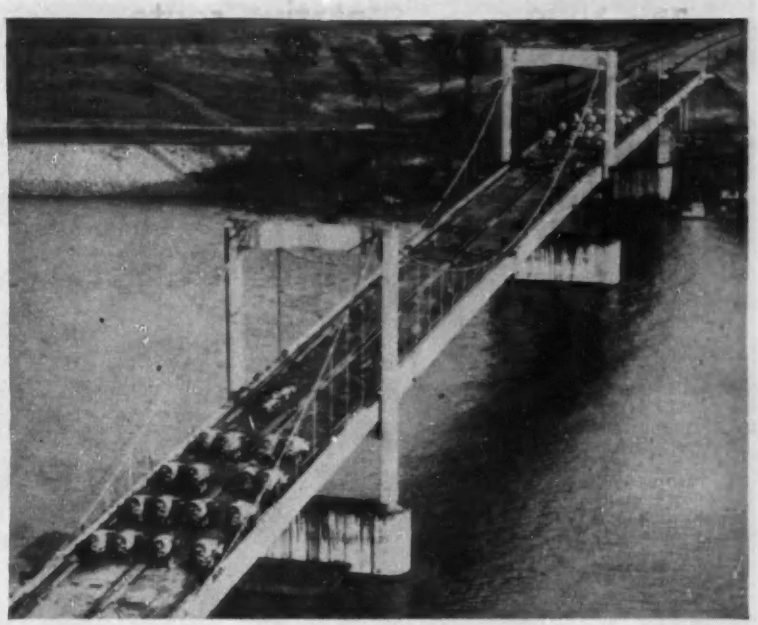
The Highway Commission's report suggested that the proposed toll road generally follow the route of U. S. 6. A four-lane road, it would have two 24-ft paved sections separated by a 15-ft parkway with 10-ft shoulders. The road would require 22 railroad grade separations, 245 highway grade separations, 17 interchanges and 50 bridges, including a new $7-million span across the Mississippi River just north of Davenport.

For proper operation, the report said, 41 buildings would be necessary: one administration building, 13 maintenance buildings, 17 toll houses and plazas and 10 service areas with restaurants and filling stations.

Cost estimates included $125.3 million for construction and $54.7 million for administration and engineering. The construction costs break down to: $11.4 million for right-of-way; $14 million for preparing the right-of-way; $38.1 million for paving; $9.5 million for bridges; $18.6 million for grade separations; $6.6 million for buildings; and $2.4 million for various equipment.

The report estimated that the toll road would carry 4,325 vehicles daily for the full trip. With short hauls, estimated annual traffic would amount to 4.3 million vehicles producing an annual gross revenue of $9.8 million. Operating costs for the first year were estimated at $2 million. The project could be liquidated in 21 years.

Two firms of engineers assisted the Highway Commission in the preparation of the report. Coverdale and Colpitts, New York, made traffic and revenue studies. Howard, Needles, Tammen and Bergendoff, New York, made location, construction, maintenance and operation studies.



Trucks make counterweight to align bridge girders

Empty concrete mixing trucks were used to align the center-span box girders of the 1,232-ft-long Paseo toll bridge over the Missouri River in Kansas City, now the longest self-anchored suspension bridge in the world (ENR Apr. 16, 1953, p. 35). A total of 32 trucks with a combined weight of 352 tons were used—half on each of the 308-ft side spans. They raised the middle of the 616-ft center span 5¼ in. Jacks corrected the remaining differences in alignment of bolt holes at the closure. Formal opening of the bridge was Aug. 13. American Bridge Co. was the builder, and Howard, Needles, Tammen & Bergendoff were engineers.

Chemical concerns will begin research for soil stabilizer to treat subgrades

The U. S. Bureau of Public Roads is about to sign a series of agreements with chemical manufacturers for soil stabilization research aimed at developing a cheap, easily applied chemical stabilizer for treating highway subgrades. The first of the agreements probably will be signed in two weeks.

Such materials as calcium acrylate, vinyl acetate-maleic acid copolymer, chrome-lignin, aniline-furfural and fly ash-calcium chloride mixtures have been tested for different stabilizing applications.

Different stabilizers are needed for different soils in order to make the subgrade a uniform load-bearer under varying weather conditions. The ideal base, according to the BPR, is a clay-sand-gravel mixture which compacts to high density and still retains its stability and load-carrying qualities under most conditions.

Hence, the search is for stabilizers that will give soils the characteristics of such a base. This means, for example, giving sandy soil a more binding quality, or opening up clay soils to give them a more pervious character.

If the material is an effective stabilizer, researchers have generally found two drawbacks to widespread use: Cost of the chemical is often too high; mixing the material with soil to an adequate depth is usually too expensive and difficult.

If a highway builder can find an effective subgrade stabilizer, he might use an 8-in. rather than a 10-in. concrete slab for a specific job. This might cut actual pavement cost by as much as 50 cents per square yard—the equivalent of $7,000 per mile.

As envisioned by Public Roads officials, the research would involve primarily the sharing of skills and know-how. The bureau would supply information on structure and mechanical properties of soils; companies, the chemical skills.

The bureau would either supply samples of typical subgrade soils for a company to treat and return for testing, or the bureau may itself both apply and test the chemical stabilizers sent by a company. Concerns would keep full proprietary rights to their developments.

FIRST IRON ORE mining in mineral-rich Quebec-Labrador region is forerunner of . . .

Challenging construction jobs up North

From the wilds of far northeast Canada a shipment of high-grade iron ore arrived early this month in Philadelphia to mark the opening of one of the most promising industrial frontiers in North America.

In these northern wastes, a vast construction market is growing up around some of the biggest ore deposits in the world: 417,000,000 tons of proven high-grade ore reserves.

After 12 years of exploration and four years of construction, the ore is beginning to trickle into U. S. mills.

The ore freighter Hawaii carried the first 20,000 tons of ore from the Knob Lake deposits of the Iron Ore Co., of Canada, up the Delaware River. It had loaded its cargo at Seven Islands in the Gulf of St. Lawrence a week before. The ore had come 360 mi along a one-track railway from deep in the North. Weather permits rail shipments only five months a year. This railway (ENR Sept. 11, 18, 1952, p. 38) is the symbol of what may turn into the biggest single construction job of the generation.

Construction expenditures in the next 10 years could run well over $1 billion if the present operation of Knob Lake ore pits is any yardstick.

In the last four years the developers of Knob Lake have done all this:

- Built 360 mi of railway and terminal facilities through trackless wilds.
- Operated the largest civilian airlift in history to carry out the job.
- Built camps and way stations for 6,900 men employed on the project.
- Constructed handling and dock facilities for annual shipment of 10,000,000 tons of ore.
- Built two major dams and hydroelectric plants.
- Prepared the open-pit mines for operation.

This one vast operation involved a construction expenditure of $250 million in only four years. Probably never before have private interests spent so much, so fast in any development.

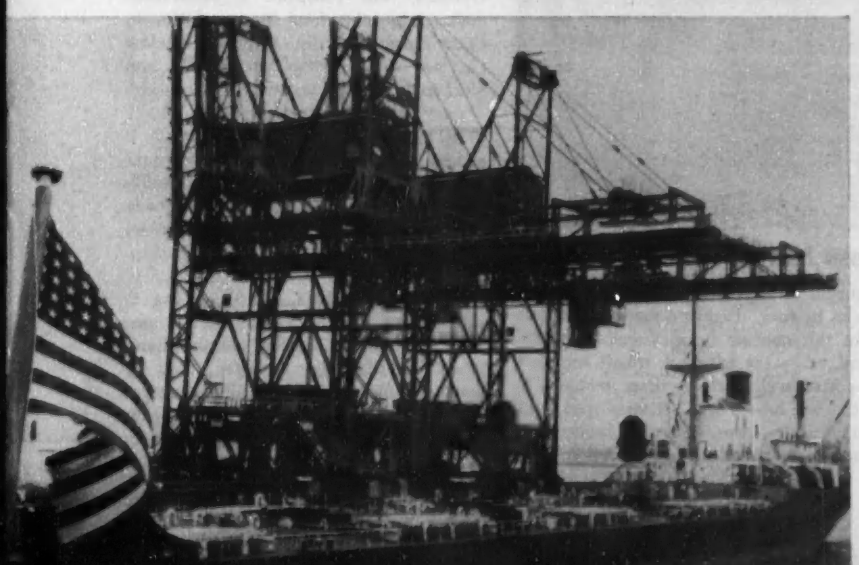
But the deposits of iron ore around Knob Lake represent only one of some half dozen huge ore bodies that still have been only surveyed. Far to the north of Knob Lake, the Cyrus Eaton interests of Cleveland, Ohio, will wind up surveys of ore deposits at Ungava Bay in November, "freeze-up time" in the frigid sub-arctic. Ore at Ungava is medium grade and lies under a slight overburden. Studies for ports in Ungava Bay and hydro projects on the rivers nearby are nearing completion, and full-scale construction could start in the next few years.

To the east of Knob Lake, around the famous Goose Bay Army Base area, the largest ore concession in the whole region is held by the Newfoundland & Labrador Corp., Ltd. Neighboring this concession are vast holdings of the British Newfoundland Corp. These properties are both under survey at the present time, and their development could involve expenditures as large as the Knob Lake venture.

Significantly enough, iron ore is not the only wealth in Labrador—mixed in with the iron deposits are huge deposits of copper, zinc, titanium, molybdenum, and nickel ores.

The St. Lawrence Seaway will have a tremendous impact on development of the area. Estimated annual shipments from Seven Islands will jump from 10,000,000 tons to 20,000,000 tons when fully loaded ore ships can go all the way to the Great Lakes ports. At present ore from Labrador must be transshipped from freighters to barges.

Not to be forgotten in estimating development prospects is what may become the biggest single hydro project in the world. At Grand Falls on Labrador's Hamilton River (see page 69) there is a potential of from two million to four and one-half million kw. The drop in the falls there is 250 ft. British Newfoundland Corp., whose ore operations could benefit tremendously from such an important source of cheap power, now is surveying the project. Cost might easily run as high as $500 million.



Iron ore takes 1,700-mile trip

From the Knob Lake region deep in the northern wastes of Quebec-Labrador the lifeline of new frontier extends along a 360-mi single track railroad and across 1,360 mi of open sea to a big new ore pier in Philadelphia.

The Quebec North Shore & Labrador Railroad (top, left) was cut through a bleak wilderness from the Gulf of St. Lawrence north to Knob Lake. Construction was hazardous all the way: in the winter, arctic snow and wind; in the spring and fall, rock and mud slides; in the short summer, swarms of stinging black flies.

Seven Islands ore loading terminal (center, left) on the Gulf of St. Lawrence is the heart and brain of the Knob Lake ore operation. The railroad, controlled entirely from this point, will bring seven to nine 115-car trains daily to the terminal to make up the 10,000,000-ton yearly shipment of ore.

Unloading pier in Philadelphia (bottom, left) is a brand new installation put up by the Pennsylvania Railroad to handle ore from Quebec-Labrador and also from Sweden, the Middle East, Africa, Brazil, Venezuela, and Chile.

On its way (below) the ore moves from the ship on a conveyor belt to freight cars which will carry it to smelters in the eastern U. S.

Five workers killed in second cave-in of Koolau traffic tunnel in Honolulu

A cave-in Aug. 14 trapped and killed five men working on the new $4.5-million Koolau mountain traffic tunnel near Honolulu, T. H.

The men—part of a nine-man shift—were caught when steel ribbing collapsed and the tunnel fell in on them at almost the same place as a previous cave-in had occurred last month with no injuries (ENR, July 29, p. 25).

Two others were injured and an eighth man ran free. The ninth man had walked off the job three hours before the cave-in occurred because he said it was unsafe.

Neither E. E. Black, tunnel contractor, nor Karl A. Sinclair, special Honolulu city-county tunnel engineer, could immediately explain the collapse.

The earlier cave-in had been blamed on heavy rains which soaked the earth above the bore. After that collapse, steel supports along the bore were doubled with spacing at intervals of 18 in. instead of 3 ft as before.

The men killed Aug. 14 were at work clearing out the muck of the previous cave-in which had left a sink hole on the mountain surface 150 ft. above. When the first cave-in occurred the bore had penetrated 2,100 ft of a contemplated 2,700 ft into the mountain. In the collapse 4,500 yd of material poured into the shaft, buried a power shovel and filled about 200 ft of bore previously excavated.

Losses resulting from the first collapse were expected to run from $50,000 to $100,000 and it is still to be decided whether the city-county of Honolulu or the contractor will foot the bill.

The city-county first was going to call in a California expert to check the cave-in but finally allowed work to proceed. William C. Vannatta, city engineer, said he had decided the key to any settlement of extra costs involved would lie in the contract specifications and that an engineering study was therefore not needed.

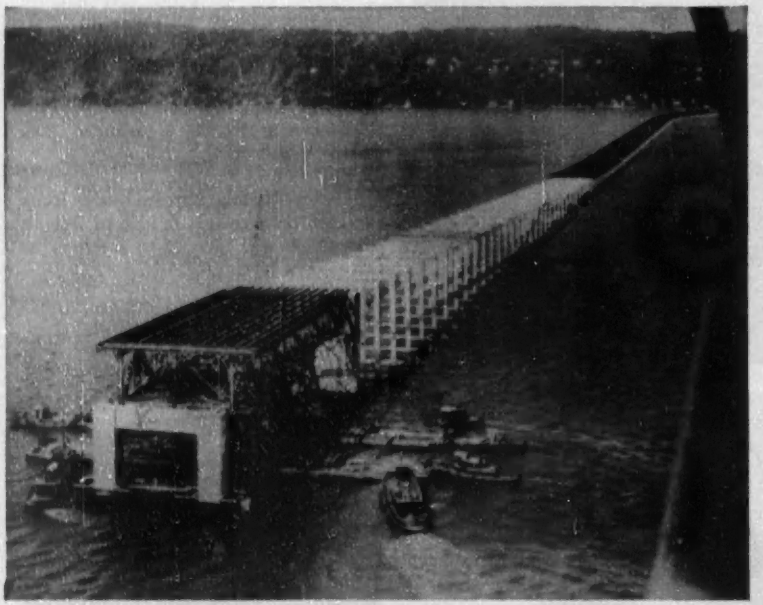
The city-county had agreed, however, to pay for the cost of additional bracing to be used in the rest of the tunnel.

Mayor John H. Wilson, an engineer himself, said the city would not have to bear a cent of the cave-in cost. Contractor Black declined public comment but brought in his own expert, Thomas L. White, of Omaha, to study the first collapse.

The Territorial Labor Department inspected the tunnel two days before the first cave-in and warned Black of safety violations. The department later announced that most of the violations had been corrected and that the contractor had promised to do everything "humanly possible" to correct the rest.

The labor department said housekeeping in the work area had been improved and scrubbers, an accessory to eliminate carbon monoxide from motor vehicles, had been installed or repaired. Drainage was improved as much as possible, it was reported.

The time lag between the setting of the steel ribs and the pouring of concrete walls for permanent support also was to be reduced. Some of the bore area affected by the cave-in had been supported by the ribs for 17 days before the collapse.



Thruway bridge going up across Hudson River

Pointing toward mid-1955 completion of the New York-Buffalo New York State Thruway, American Bridge Co. places the first deck truss span of the $60-million Hudson River Bridge between Tarrytown and South Nyack, N. Y. Riding on two freight-car barges and 400 tons of falsework and grillage, the 900-ton span was brought by tugs from an assembly yard 12 miles up-river. Eighteen more 250-ft units like this one are being assembled at the yard, as are the falsework trusses for erecting a main-channel cantilever bridge. The latter will have a 1,212-ft main span, with 602-ft side spans. In the background, girders are erected for trestle section.

Jobs in the news

HOTELS—Two new luxury hotels are in the planning stage. A $10-million resort hotel near Beverly Hills, Calif., will be built by Belmonte Hotel Corp., Los Angeles. Benedict, Beckler and Kocher, Los Angeles architect-engineers, and Erwin C. Gerber, New York architect, are working on plans. A $5-million, 10-story downtown hotel in Las Vegas, Nev., is planned by San Francisco financier Louis Lurie. Architect for the 150-room structure, which will be called Fremont Hotel, is McAllister and Wagner, Los Angeles. Structural engineers are Brandown and Johnson and John A. Martin, Los Angeles.

PIPELINES—Fish Engineering Co., Houston, Tex., will build a pipeline and compressor stations from Ignacio, Colo., to Bellingham, Wash., for the Pacific Northwest Pipe Line Corp., Shreveport, La. Estimated cost is $160 million. R. H. Fulton, Lubbock, Tex., and Panama-Williams Co., Houston, will construct a $25-million crude oil pipeline from Merino, Colo., to Great Bend, Kan., for Araphone Pipeline Co., owned jointly by Pure Oil Co. and Sinclair Pipe Line Co.

FORD EXPANSION—Ford Motor Co. is planning an $18-million construction program at Dearborn, Mich., to include a $7-million office building, a $6.5-million body engineering building and a $4-million research building.

CHEMICAL PLANT—M. W. Kellog & Co., New York, has been awarded a contract to build a $17-million anhydrous ammonia and nitrogen products plant for Standard Oil Co. of Ohio. Site is not yet selected but will be in the Lima-Toledo area.

ARBA annual meeting to have highway materials exhibit

An exhibit of highway materials and supplies is to be held in the International Hall of the Roosevelt Hotel in New Orleans Jan. 10-13, 1955, in connection with the annual convention of the American Road Builders Assn. Sponsor for the exhibit is the Materials and Supplies Division of the ARBA.

The big ARBA road show of construction equipment is to be held in the International Amphitheater, Chicago, early in 1957. Its sponsor is the Construction Industry Manufacturers Assn., which also is the Manufacturers Division of ARBA.

New symbols to identify signal systems components

A set of standard symbols for use in building plans to identify components of various signalling systems has been adopted by the National Electrical Manufacturers Association.

The new NEMA standards are designed to meet the needs of the building industry, particularly in projects requiring the installation of complex signalling systems. Eleven relatively simple and distinctive basic symbols make up the set.

NEMA has recommended the new symbols to the American Standards Association for inclusion in American Standard Y32.9, Graphical Electrical Symbols for Architectural Plans.

Florida group asks restudy cross-state waterway plan

A fund of $7,500 has been raised in Florida for a restudy of plans to build a $100-million canal across the state from the Atlantic to Gulf of Mexico.

The canal project was approved by Congress in 1942, and about $1.5 million was spent on planning. No money for construction, however, was appropriated.

A Florida delegation has conferred with the Corps of Engineers in Washington and will submit a formal recommendation for reviving the project. The delegation included Malcolm S. Fortson, head of the Florida Cross-State Barge Canal Authority; Kenyon Parxons, of the Jacksonville Chamber of Commerce; H. H. Buckman, a Jacksonville consulting engineer; and several Florida congressmen.

As planned, the canal would go down the St. Johns River from Jacksonville to Palatka, enter the Oklawaha River, pass Ocala, connect with the Lacoochee River near Dunellon, and enter the Gulf of Mexico just beyond Inglis and Yankeetown on Florida's west coast.

LABOR

UCW challenge

Ohio building trades see mine workers as threat on road jobs

Members of John L. Lewis' United Construction Workers union, part of the catch-all District 50, are moving in on AFL building trades in parts of Ohio, Kentucky and West Virginia.

Growing concern among building trade leaders has been indicated by a resolution adopted by the Ohio Building & Construction Trades Council, warning members of increased organizing activity by the UCW.

Explaining the recent resolution, Robert Burwinkel, OBCTC secretary-treasurer, asserted that, with mine employment decreasing, the Lewis' unionists are "making inroads and transgressing on our territory." The trend is particularly noticeable in the unskilled trades, he pointed out.

Burwinkel cited a case in Lima, Ohio, where ex-miners showed up as laborers on an oil refinery construction job about two months ago. Although the AFL protested, its action came too late because the contractor already had signed an agreement. And, Burwinkel explained, a strike action would have been illegal under terms of the Taft-Hartley Act.

UCW organizing activity in connection with roadwork on the Kentucky and West Virginia borders apparently sparked the OBCTC resolution. According to Burwinkel, the union rivalry is "actually giving trouble" in these areas and threatens Ohio road projects.

OBCTC complains that unemployed mine workers are not respecting AFL wage or trade lines and frequently offer contractors assurance that their employment will not cause jurisdictional trouble. In some instances, Burwinkel contended, miners are accepting wages at least one-third below the going area rate.

Colorado will experiment with convict road labor

Overcrowded prisons in Colorado have led to an experiment in using convict labor on road improvement work in two counties. Two volunteer crews of 25 men each from a reformatory have been placed in work camps and are working on isolated county roads at 11,000 and 12,000 ft. elevations.

Tackling the new policy cautiously, J. Price Briscoe, state director of institutions, declared last week that "we are trying to avoid any conflict with organized labor and projects will have to be set up that are not competitive." Briscoe has asked the U. S. Forest Service to survey possible work camp sites in wilderness areas where convicts could work under supervision on timber control projects.

Joint board sets hearing on tilt-up dispute

A four-union squabble over jurisdiction in tilt-up construction techniques will come up for decision before the National Joint Board for Settlement of Jurisdictional Disputes in the Construction Industry Aug. 30, a joint board announcement said last week.

The particular issue up for settling involves which unions do the setting, lining, plumbing, bedding, grouting, pointing and calking of concrete slabs in connection with tilt-up construction. It is believed to be the first time since wide acceptance of the tilt-up method that a labor dispute on it has reached the national level.

• **Bricklayers seek answer**—According to an official joint board announcement, the hearing is being held at the request of the Bricklayers', Plasterers' and Masons' International Union, after a conference between the four unions involved broke up July 20 without any agreement.

The three other unions named by the bricklayers as parties: carpenters, bridge structural and ornamental iron workers, and operating engineers.

The notice was sent to heads of all AFL building trades unions, and to contractor groups—any of whom may intervene as interested parties.

Labor briefs . . .

• **Indigenous labor suit**—A probate court jury in Arco, Idaho, a community near the AEC's National Reactor Testing Station, has levied a $300 fine against a Utah construction firm for failure to comply with Idaho law requiring out-of-state contractors to employ 95% Idaho residents. The firm, LaGrande Johnson Co. of Logan, Utah, is working on a $700,000 federal aid highway project (ENR Aug. 12, p. 29).

• **Scranton raises**—Carpenters and hod carriers at Scranton have accepted a proffered 10 cents an hour raise from the Scranton Builders' Exchange.

GRIFFIN WELLPOINT
in Pumping Efficiency Test

ESTABLISHED 1880

United States Testing Company, Inc.

HOBOKEN, N. J.
TELEPHONE: HOBOKEN 3-3166

REPORT

NUMBER
E-9687
(Refer to this number)
June 8, 1954

Client: Griffin Wellpoint Corp.
881 East 141st Street
New York 54, New York

Subject: Comparative Flow Efficiency Test on five brands of Wellpoints

Following is a summary of the test we conducted comparing the performance efficiency of wellpoints manufactured by Griffin Wellpoint Corporation, with those of four competitive brands.

Our procedure was to pump water from a reservoir through each wellpoint into a calibrated tank. The rate of flow through the wellpoint determined the relative efficiency. Samples were furnished and identified by the client.

The results are tabulated below:

	Vacuum in.	Pump Speed RPM	Time Sec.	Volume Gallons	Gallons Per Min.
Griffin	25	1625	66.6	100	90.1
Wellpoint A	25	1663	72.5	100	82.6
Wellpoint B	25	1650	72.5	100	82.6
Wellpoint C	28	1700	129.0	100	46.5
Wellpoint D	28	1706	148.1	100	40.5

From these results it may be concluded that the Griffin Wellpoint yields more water than the other brands tested.

Page 1 of 1

Supervised by Alan E. Surosky
Manager, Engr. Div.

United States Testing Company, Inc.
BY John Mooney

OUR LETTERS AND REPORTS ARE FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM THEY ARE ADDRESSED, AND THEIR COMMUNICATION TO ANY OTHERS, OR THE USE OF THE NAME OF UNITED STATES TESTING COMPANY, INC., MUST RECEIVE OUR PRIOR WRITTEN APPROVAL. OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS.

C 11AR1-6-51-38

YIELDS MOST WATER

by U. S. Testing Co., Inc.

All 5 leading makes of self-jetting wellpoints included as country's foremost testing organization compares rates of flow. Results show Griffin superiority as follows:

For years, false and misleading claims have been made regarding Griffin wellpoint equipment. Up to now there has been no comparative proof under identical conditions—by a completely unbiased source.

Now, a test has been made by the world's leading testing organization. Results appear on these pages.

You contractors, who spend large sums each year for wellpoint service, will calculate what Griffin's superiority means to you in many ways:

- less equipment
- less weight
- less freight
- less handling
- less pumping time
- lower total cost

On your next wet job, play safe and be sure — count on Griffin's *proven* superiority to dry your project swiftly and economically.

Griffin's large staff of experienced graduate engineers is available to assist you in estimating the dewatering item in your bids. Fill out and mail the attached coupon to be placed on our active FREE PRE-BID SERVICE mailing list.

	Gals. per Min.
GRIFFIN WELLPOINT	90.1
WELLPOINT A	82.6
WELLPOINT B	82.6
WELLPOINT C	46.5
WELLPOINT D	40.5

Further details are contained in the U. S. Testing Co. Summary Report on the facing page. The full Report is available for your inspection, on request.

This coupon is for your convenience

Griffin Wellpoint Corp.
881 East 141st St., New York 54, N. Y.

Gentlemen:

☐ I would like to see the full U. S. Testing Co. Report
☐ Place us on your mailing list for Free Pre-Bid Service

Send me literature as checked: ☐ 1954 Griffin Catalogue
☐ Wellpoint Manual ☐ Jetting Pump Catalogue
☐ Electro-Osmotic Soil Stabilization Report.

Individual's name _____

Title _____

Firm name _____

Address _____

_____

GRIFFIN WELLPOINT CORP.

Dewatering and Soil Stabilization

MAIN OFFICE: 881 East 141st Street, New York 54, N. Y.

Jacksonville, Fla.: 2016 E. Adams St. • Hammond, Ind.: 548 Indiana St. • Houston, Tex.: 6100 Harvey Wilson Drive

In Canada: Construction Equipment Co., Ltd.—Montreal, Toronto, Halifax, Edmonton

PRETENSIONED BEAMS 58 ft long were factory made to carry the Garden State Parkway over U.S. 322 near Atlantic City.

Novel prestressing techniques for bridges

Garden State Parkway bridges, in New Jersey, were fabricated by both pretensioning and post-tensioning

M. E. Bender
Bridge Designer
Gannett Fleming Corddry and Carpenter, Inc.
Harrisburg, Pa.

STEEL YOKE pulled by a jack stressed strands one at a time for the pretensioned beams.

Prestressed beams for 12 bridges on the Garden State Parkway in New Jersey were fabricated in a precasting factory by two different methods: Fascia beams were post-tensioned, while interior beams were pretensioned.

The bridges, built on an 8-mi section west of Atlantic City, were designed for eight locations on the 165-mile north-south toll route, which will connect Clifton, N. J., 10 miles west of New York City, and Cape May, at the southern tip of the state. At four of the locations there are separate bridges for the northbound and southbound lanes. In addition, two of the bridges—one over the Blackhorse Pike (U. S. 322), which extends between Atlantic City and Camden, and one carrying the Blackhorse Pike interchange ramp—consist of two simple-beam spans each.

• **No bid on ordinary design**—Bids were asked for reinforced concrete T-beam construction and for alternates with prestressed concrete beams and cast-in-place concrete deck. Estimates prepared with the bidding indicated that costs of the two types of construction were nearly equal. But contractors submitted bids only for the prestressed-concrete alternates.

Costs varied with spans, which ranged from 39 to 60 ft (see table). On the average, beams cost slightly over $5 per sq ft of deck. With deck and handrail in place, price for the superstructures averaged $9 per sq ft.

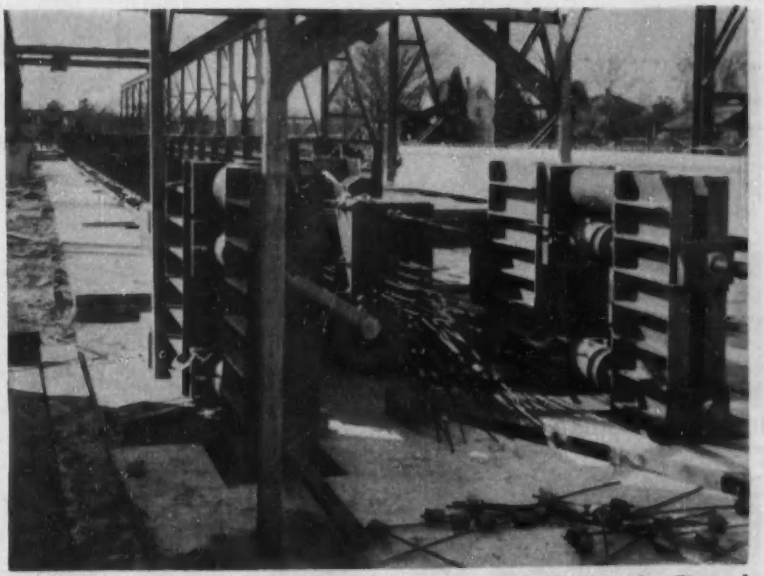
• **Beam sizes standardized**—Despite the variations in spans, the designers called for the same size beams for all the bridges but varied the number of steel tendons in each beam and the beam spacing. Interior beams are

Pretensioning vs post-tensioning

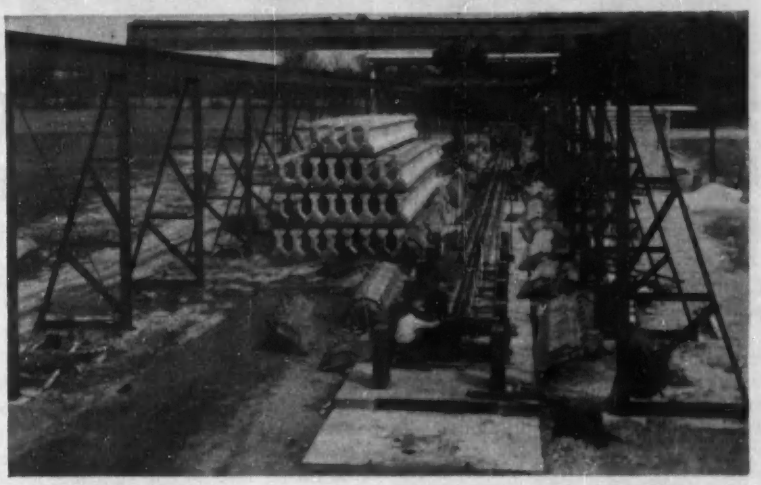
Major difference between the two methods is the manner in which prestress is transferred from the steel tendons to the concrete:

FOR PRETENSIONING, the tendons are stretched between heavy external anchorages at the ends of a casting bed, forms for one or more beams are placed around the steel, and concrete is placed in them. When the concrete attains sufficient strength, the tension on the tendons is relieved and the steel between beams cut. Thus, the prestress is transferred to the concrete through bond initially.

FOR POST-TENSIONING, the beam is formed around unstressed tendons, bond between steel and concrete being prevented. The tendons are tensioned with jacks acting against the hardened concrete of the beam, and then the steel is anchored at the ends to it. The tendons may be grouted in later to establish bond, but initially the prestress is transferred to the concrete through the end anchorage.



STRESSING END of a 320-ft pretensioning bench consists of jacks and pulling rods between fixed heads (steel uprights) capable of stressing strands simultaneously.



ANCHORAGE END of bench has steel uprights at intervals to accommodate various casting lengths. Crane pulls strands to this end from reels at the stressing end.

I-shape, 33-in. deep, with a 6-in. thick web, 12-in.-wide top flange and 19-in. bottom flange. Fascia beams, however, are rectangular in section, to meet requirements for a smooth, plumb exposed surface. These members are 33 in. deep and 16 in. wide.

Design calculations assumed the beams would carry all the dead load, including the weight of the deck, so no false work would be necessary during construction. For live loads, the deck was considered part of the compression flange of the beams, composite action being developed by shear keys in the top flange of the beams and by conventional stirrups.

• **Design considerations**—The Interior beams were designed for pretensioning with steel strands. An allowance of 20% for loss of prestressing force was imposed to provide for creep, shrinkage and elastic deformation. Conventional reinforcing was provided in top flanges to compensate for slight tension near supports.

Fascia beams were designed originally also as pretensioned members but having a smooth vertical face to comply with architectural requirements. However, when it became evident that delays in delivery of equipment needed for fabrication would

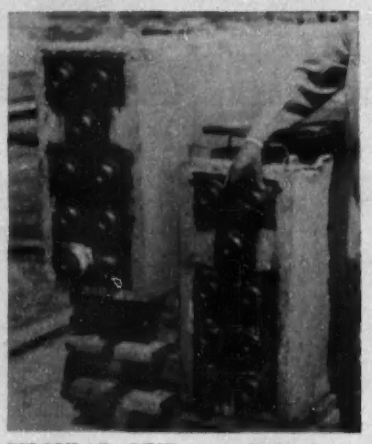
(*Continued on page 34*)

Prestressed beams for Garden State Parkway bridges

Crossing	Span Feet	Roadway Width-Ft	Interior Beams No. req'd	Interior Beams Strands in ea.	Fascia Beams No.	Fascia Beams Cables in ea.
Ocean Heights Ave. (2 bridges)	60.4	40.0	24	40	4	9
Zion Road (2 bridges)	50.2	40.2	20	34	4	7
Blackhorse Pike Inter. (Twin span)	48.8	24.0	10	32	4	7
Blackhorse Pike (Twin span)	57.8	90.0	52	40	4	9
W. Jersey & Seashore R. R.	39.0	90.0	20	24	2	4
Washington Ave.	53.0	90.0	24	36	2	8
Delilah Road (2 bridges)	56.3	40.0	20	40	4	8
Westcoat Road (2 bridges)	51.5	40.2	20	36	4	8

HEADING MACHINE puts "button heads" on wires comprising a cable for the post-tensioned beams. Bearing against a cylindrical block, the heads anchor the wires.

CABLES are laid in flexible conduit to prevent bond with the beam concrete.



CIRCULAR NUT on cylindrical end block transfers cable stress to concrete.

result in failure to meet extremely tight construction schedules, a decision was made to post-tension the fascia beams, which could then be fabricated concurrently with the pretensioned members.

For prestressing the fascia beams, parallel-wire cables were used. Some of these were placed in a curve so that there would be no tension in the top of the beams due to prestressing force. Since some shrinkage takes place before prestress is applied, and since corrections for elastic deformation can be made at the time of stressing, allowance for loss of prestress due to creep and shrinkage was reduced for this design to 15%.

Diaphragms, to be cast with the deck, were called for at the supports and near the third points of the spans, to stiffen the beams laterally and improve distribution of live loads to them. Top flanges were to be braced in the horizontal direction by shoulders in the slab.

At each of the third-point diaphragms, provisions were made for transverse prestressing with a single cable in flexible conduit. No attempt was made to calculate possible bending moments in the transverse direction, with the diaphragm acting as a beam, because of the unsupported assumptions that would be necessary. An arbitrary axial load of 70 kips was selected as being sufficient to improve the stiffness and distribution factors for the entire deck.

Allowable stresses and other design criteria are given in an accompanying table.

• **Pretensioning**—The prestressed concrete beams were fabricated in two plants in Berlin, N. J., 30 miles from the bridge sites. A new casting and pretensioning bed, designed by The Freyssinet Co., New York City, was constructed for forming the interior beams.

Of rib and slab cross section, with solid end blocks to resist jacking forces, the bed is 320 ft long, incorporating over 300 cu yd of concrete and 15 tons of reinforcing steel. Multiple end posts permit the location of the fixed-end anchorage to be changed to adjust for varied casting lengths. On both sides of the pretensioning bench, at the stressing end, are a pair of vertical steel posts anchored at the base. A threaded steel pulling rod passes between each pair of uprights and through a 100-ton centerpull jack, which can push against an upright. The jacking force thus can be applied through the pulling rod to a horizontal steel beam, which, when moved, stretches the prestressing steel.

Structural steel framework extends along the entire length of the bed to carry two moving cranes. A boiler house for producing curing steam, weighing and mixing equipment in a covered area, and a compressor house complete the installation.

Fabrication of the pretensioned units was planned to eliminate lost motion. The first operation was stressing the strands, which could be done for five or six beams at a time, depending on their length.

These strands were $\frac{3}{8}$ in. in diameter. Each was made up of seven wires, to provide a total area of 0.0799 sq in.

The strands were unrolled from ten reels mounted in a vertical position on spindles and roller bearings. Ten strands at a time could be pulled the length of the bed and cut to length. On each was placed anchorage cones made of cold rolled steel, $2\frac{1}{4}$ in. long. These had tapered holes in which were placed alloy steel wedges to grip the strands.

At the fixed end, the cones acted against a vertical steel templet having holes properly spaced for the strands. One set of templets sufficed for all beams. When units required less than the maximum number of strands, the pattern was retained but strands were removed as required according to the magnitude and location of the prestressing force.

At the stressing end, the strands were passed through the proper holes in another templet, and two anchorage cones were placed on each end. One cone was left loose to be driven tight against the templet when proper elongation was attained. The second cone, placed about one foot beyond the anchorage, was used to provide a grip for an auxiliary jack that applied the prestress. This setup was used instead of the 100-ton jacks on the steel uprights to meet specification requirements that the strands be tensioned one at a time initially to a gage pull of 400 lb. The connection between jack and gripping cone was made by means of a steel yoke about 5 ft long.

As long as the initial stretching had to be done one strand at a time, it was easy to continue stressing in this manner to the full design tension, though the end anchorage was de-

(*Continued on page 36*)

American peacetime free enterprise will constantly produce more and better goods for more people. New and better highway needs have increased state highway construction budgets 18% over last year. Ohio's turnpike is one of many super roadways which will speed the flow of more goods and bring markets nearer.

Less Equipment Downtime...

because "Commercial" oil hydraulic controls require less maintenance

Today it's hard to find on-highway or off-highway heavy duty equipment not utilizing the advantages of fluid power transmission. Because there is a difference among oil hydraulic controls, here's why "Commercial" pumps, motors, valves and cylinders are your best buy. They can help a lot to keep your construction equipment on the go and the job on schedule.

Here is the complete line of 1500 psi oil hydraulic controls. Many sizes in each of three series of gear type power packed pumps will give you any desired discharge capacity up to 80 gpm at 1200 rpm. Just as complete a coverage is available from the three series of motors with output as high as 35 hp. Sectional type valves are your finger-tip operating panel for fatigue-free directional control of cylinders. Three types of cylinders satisfying every condition are your best means of converting all of this controlled power into useful work—single acting capacity up to 24 tons, double acting capacity up to 25 tons, and 2 to 5 sleeve telescopics for long strokes where space is limited in the closed position.

Because all "Commercial" controls are of simplified design, built for rugged long life operation, tried and proven for over 25 years—maintenance is only routine. You can rely on them, and all they ask in return is to be let alone so they can work for you. Here's a sure means of lowering your maintenance costs.

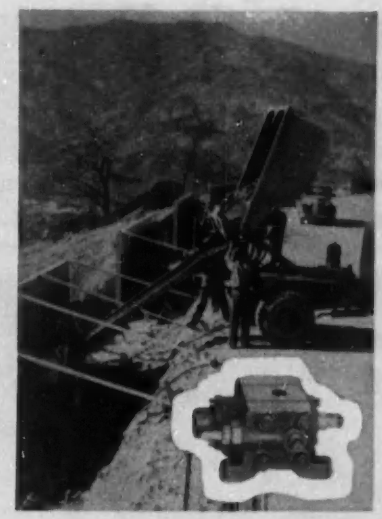
"COMMERCIAL"

"PRODUCTS PREFERRED BY CUSTOMER ACCEPTANCE"

THE COMMERCIAL SHEARING AND STAMPING COMPANY
Youngstown, Ohio Chicago, Illinois Salt Lake City, Utah

PUMPS · MOTORS · CYLINDERS · VALVES

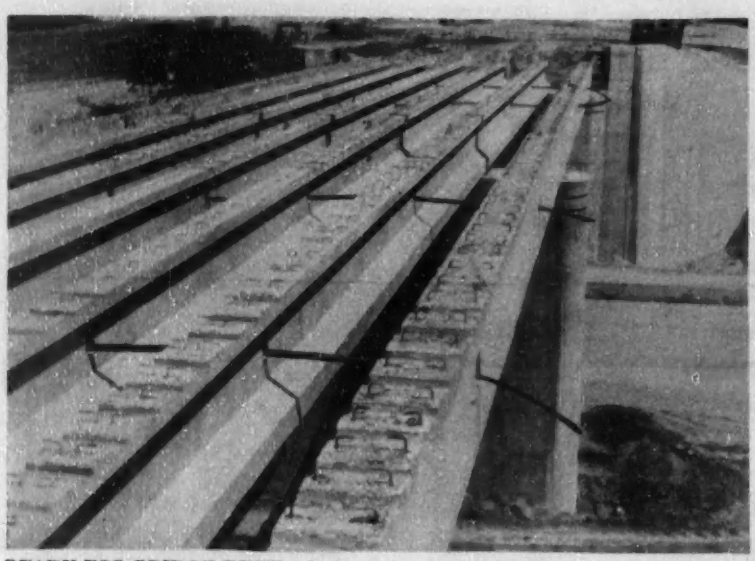
RA-54



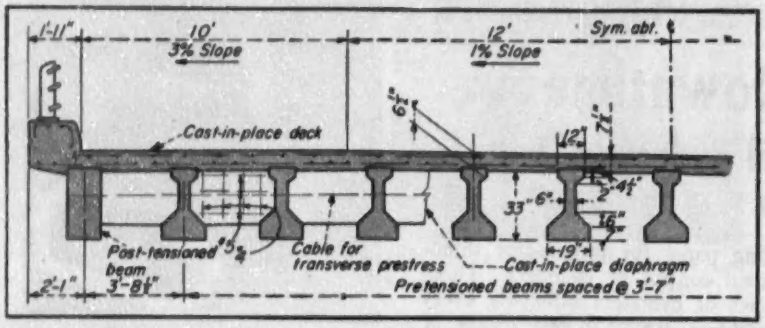
"Commercial" pumps, valves and cylinders provide positive control for fast or slow, clean vertical angle discharge of the "Hi-Gate" Dumpcrete.

Three separate "Commercial" heavy duty hydraulic pumps, all driven by one thru shaft, generate abundant power to operate the tools of the Gradall.

Twin "Commercial" two-sleeve telescopic cylinders swing the drill rig boom into vertical position. The action is smooth, fast, positive and safe.



READY FOR BRIDGE DECK, which will be cast in place, beams have shear keys on top to insure composite action with the slab. Cables for transverse prestress are sheathed in flexible conduit to prevent bond with diaphragm concrete.



TYPICAL HALF SECTION—Bridge deck is placed on precast, prestressed beams. Cable through diaphragms at ends and third points of span applies transverse prestress.

Design criteria for prestressed beams

Minimum tensile strength of strands and wire	**250,000 psi**
Max. allowable tensile stress at initial prestressing	**150,000 psi**
Minimum compressive strength of concrete	**5,000 psi**
Allowable stresses in concrete at initial prestressing:	
Compressive stress in bottom fiber	2,500 psi
Tensile stress in top fiber	200 psi
Allowable stress for working loads:	
Compressive stress in top fiber of beams	2,000 psi
Compressive stress in top fiber of slab	1,000 psi
Tension in bottom fiber	0
Tension in top fiber at support	160 psi
Cracking load:	
Stresses calculated for dead load (DL) plus twice the sum of live load (LL) and impact (I); i.e., DL + 2 (LL +I)	
Allowable tension in bottom fiber	750 psi
Ultimate load:	
Stresses calculated for DL + 3.5 (LL + I) or 2.25(DL + LL + I)	
Max. compression in top fiber of slab	3,000 psi
Max. tension in bottom strands	250,000 psi

signed to stress all the strands simultaneously. This method had the further advantage of assuring equal distribution of the tensioning force.

The hydraulic jack was powered by an electric-motor-driven pump with a high and low-pressure system equipped with an adjustable relief valve.

The amount the strands should be stretched was calculated. The modulus of elasticity for this purpose was obtained from tests of the strands. Allowance was made for the gripping movement of the anchorage cones, which amounted to about ¼ in.

After the strands were stretched to the calculated value, the pull was checked against jack gage pressure. In addition, the total force was checked by reading the gage pressure on the jacks mounted on the uprights.

• **Forming the beams**—Forms were fabricated of welded ¼-in. steel plate and provided with angle supports and ribs. Angles also served as spreaders. Channels provided the base support and plywood pallets were placed on them for beam soffits. Bulkheads were made of sectional plywood with holes cut out for the strands. The forms were aligned with wood wedges acting against welded lugs on the base supports.

Stirrups and reinforcing bars were welded into cages nearby, dropped into position over the tensioned strands and fastened to them with bar ties. Then, bearing plates for the beams were positioned with anchors attached.

The concrete mix was very important in that, if delivery schedules were to be met, a two-day casting cycle was necessary. After some experimentation with various mixes, the fabricator found the following to be most advantageous: 1 bag of high-early-strength cement, 148 lb of sand, 246 lb of ⅜-in. trap rock, ¼ lb of plasticizing admixture and 4¾ gal of water. This mix had a slump of about 2 in.

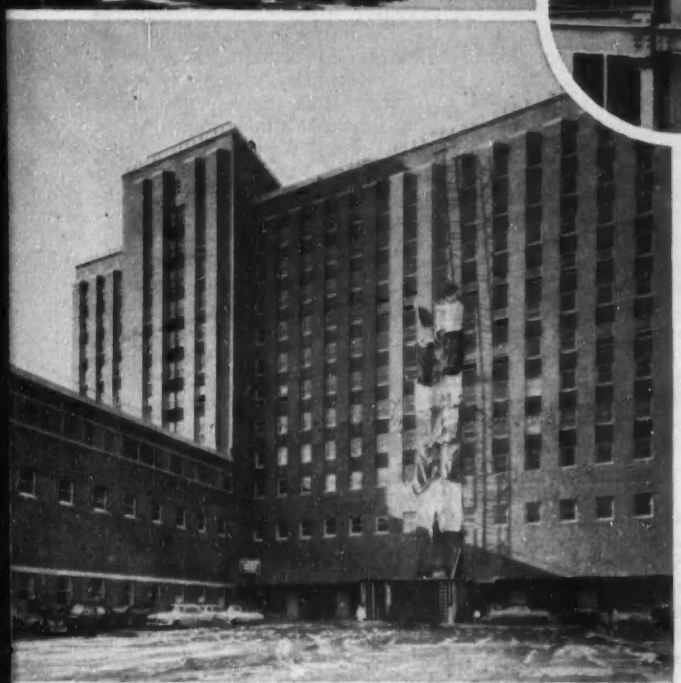
The concrete was placed in two lifts, the first to the top of the bottom flange. Vibration was applied both internally and externally to reduce air holes.

The beams were covered with corrugated sheet-metal-lined frames and tarpaulins. About three hours after the last beam was cast, steam was admitted beneath the cover through ports in a header running the entire length of the casting bed. A temperature of about 140 F was maintained for at least six hours. Some steam was admitted up to the time the strands could be cut.

Concrete test cylinders were made during the casting of each beam and placed under the canvas cover on wood blocks, so as to maintain curing condi-

(Continued on page 38)

Another example of AMERICAN BRIDGE construction



Field connections on 2,300-ton steel framework made with high-strength bolts!

● The University of Minnesota's imposing new Mayo Memorial Medical Center, in Minneapolis, is one of the largest steel frame structures erected with high-strength bolts for field connections.

2,300 tons of structural steel—all of it fabricated and erected by American Bridge—went into the framework of the building. The project consisted of an auditorium approximately 100′ x 125′; an east wing six stories high, approximately 50′ x 250′; a south wing six stories high, approximately 50′ x 140′; and a fourteen-story tower section, approximately 50′ x 250′.

The successful use of high-strength bolts on a building of this size makes a good case for the soundness of this type of construction. American Bridge crewmen can make strong, tight connections with high-strength bolts as efficiently and speedily as less skilled personnel can handle the more common methods.

Another factor favoring the use of bolted connections is the reduction of construction noise. And this advantage creates considerable goodwill when erecting in business, hospital and educational areas.

But American Bridge plays no favorites when it comes to methods of making connections. Whether specifications call for riveted, welded or bolted construction, you can depend on American Bridge to handle the job with maximum efficiency, economy and speed—anytime, anywhere! For detailed information regarding your requirements, please contact the office nearest you.

Owner: University of Minnesota.

Plans and Specifications by C. H. Johnston, Architects-Engineers, St. Paul, Minnesota.

Fabricated and Erected by American Bridge.

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION • GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

Contracting Offices in: AMBRIDGE • ATLANTA • BALTIMORE • BIRMINGHAM • BOSTON • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DENVER • DETROIT • ELMIRA GARY • MEMPHIS • MINNEAPOLIS • NEW YORK • PHILADELPHIA • PITTSBURGH • PORTLAND, ORE. • ROANOKE • ST. LOUIS • SAN FRANCISCO • TRENTON

UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN BRIDGE

USS

UNITED STATES STEEL

LEADING CONTRACTORS USE McCarthy Drills

PUBLIC UTILITY AUGER DRILL

Bores holes from 4½" to 24" in diameter under sidewalks, roads, building foundations, railroad tracks, landscaped grounds, etc. Fithian Contracting Co., Youngstown, O., using McCarthy Public Utility Auger Drills, completes pipe line jobs, formerly taking weeks, in a few days.

SELF-PROPELLED HORIZONTAL AUGER DRILL

Will bore 6" and 8" diameter holes 120 feet horizontally at rate of six feet per minute maximum. Four individual, self-locking jacks maintain correct drilling level. In one day a New Castle, Pa., operator bored holes of various depths totaling 840 ft. through shale and sandstone, using this McCarthy Auger Drill.

VERTICAL AUGER DRILL

Operating men who have made actual on-the-job tests find the McCarthy Vertical Auger Drill a standout for mobility, stamina, ruggedness and versatility. On a 2-million dollar, 5-mile stretch of superhighway between Hubbard, Ohio, and Sharon, Pa., The Apex Powder Co., Canton, Ohio, cut blasting costs approximately 20% as compared to air, well or churn drilling. Cutting through two large areas of concentrated rock, 150 holes 15 feet deep were bored for each blasting pattern. 3,000 cubic yards of sand rock were moved at each blast. Due to the ruggedness and mobility of McCarthy Drills, there was no time lost. For further information, write Salem Tool Co. and our distributor will contact you.

DRILLING EQUIPMENT SINCE 1901

THE SALEM TOOL CO.

1900 SOUTH ELLSWORTH AVE.
SALEM, OHIO · U.S.A.

tions as nearly similar to those of the beams as possible. When a minimum strength of 4,000 psi was reached—a value believed necessary to develop required bond—covers were removed and forms stripped. Then the tension on the strands was relieved and the strands cut at the ends and between beams. Eighteen hours after the concrete was placed, the cylinders normally tested well over the prescribed minimum, in some cases close to 5,000 psi. (At 28 days, all the cylinders tested reached a strength above 5,000 psi, and many developed more than 7,100 psi, the limit of the testing machine.)

Observations made by marking the strands between beams before cutting and then taking readings to the face of beams before and after cutting showed no measurable slip of the strands. It was noted that with a beam length of about 60 ft, the elastic deformation due to the prestressing force amounted to $\frac{7}{16}$ in. and the induced camber averaged $\frac{3}{8}$ in.

• **Post-tensioning**—The post-tensioned fascia beams were cast individually at another plant with concrete mixes and placing methods similar to those used for interior beams. Forms were made of steel plate mounted on wood frames, with plywood pallets for the soffits.

Post-tensioning cables were made up of ten ¼-in. dia wires with "buttonheads" at each end, for anchorage by bearing against hardened steel blocks. The heads were formed in a machine that upset the ends cold.

Tests were made on the headed wires, and all samples broke at tensile stresses exceeding the strength claimed by the manufacturer. In no case did failure occur at the heads; but in some samples, the wire fractured at the section deformed by the gripping dies.

In preparing the cables, the fabricator ran one end of the wires through holes in a hardened steel, cylindrical bearing block and formed heads on the wire ends. Next, he placed the block in a fixed frame welded to a steel channel, stretched the wire with a 500-lb pull, snapping them against the channel to take out residual stresses, and then cut the wire to exact length with shears fixed to the channel. After the ten wires were cut, they were slipped through a 1¼-in. dia flexible conduit. A spacer plate enabled the wires to be kept parallel.

Next the new ends of the wires were passed through holes in a steel, cylindrical bearing block and heads formed. Finally, the cables were fastened in the proper position in the forms.

After the concrete was placed and had attained the minimum required strength, the wires were stressed with a hydraulic jack, calculated elongations being checked against gage pressures to assure no appreciable friction in the cable. To apply the pull, the jack rod was inserted in a threaded hole in the center of the cylindrical end block on each cable. Anchorage of the cable in the elongated condition was accomplished by tightening a nut that fitted over the threaded exterior of the block until full bearing was obtained against steel plates embedded in the beam ends.

After the wires were grouted in, the beams were ready for delivery.

• **Erection no problem**—Erection procedure followed normal practice. Beams were delivered to the bridge sites by trailer truck and erected with a crane. "Hair pin" lifting devices placed in each end of the beams at the time of casting facilitated handling. These anchors were left in place and covered by the deck concrete.

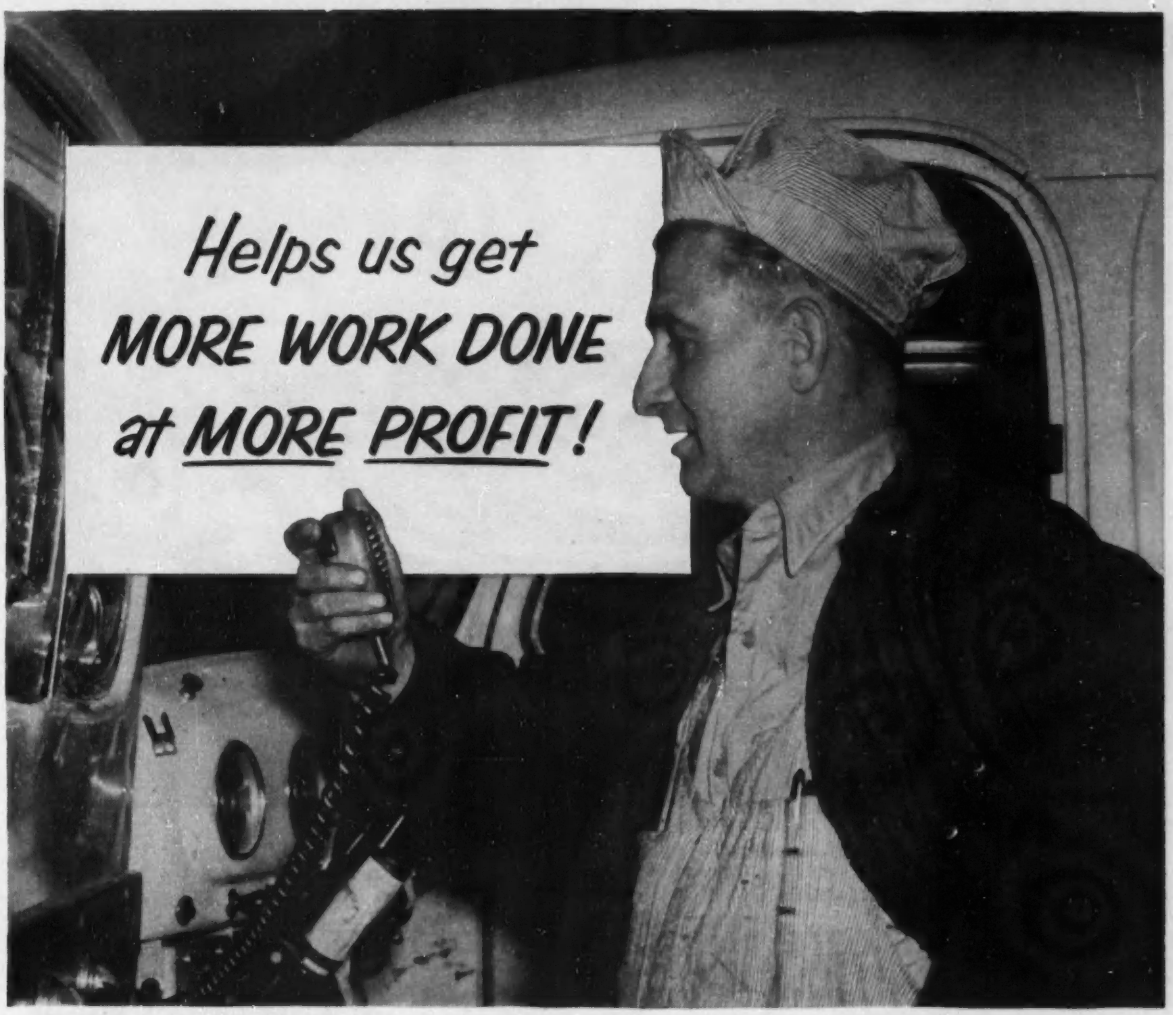
At the time that forms for the deck and for the diaphragms between beams were set, cables for post-tensioning transversely were placed in the diaphragms. Made up of eighteen 0.196-in. dia wires, these cables were laid in flexible conduit with conical-concrete anchorages on each end.

After the deck concrete was placed and had reached a minimum ultimate strength of 2,000 psi, transverse tensioning was accomplished with a double-acting jack, one action stretching the cable, the other forcing the wedge home when the calculated elongation of the wires was reached. After that, water was pumped through the conduit, followed by grout, until there was a full stream at the far end. Then, the far end of the conduit was plugged and pressure increased to 70 psi on the grout before the other end was plugged. This grouting procedure also was used for the post-tensioned beams.

• **Advantages of prestressing**—During erection, additional advantages of precasting and prestressing were realized, justifying selection of this design: **(1)** Elimination of falsework that had to be supported on sand, and (2) ability to maintain traffic over heavily traveled roads without detours.

The prestressed bridges were designed under the supervision of E. D. Schwartz, bridge engineer, and John R. Dietz, chief of the highway and bridge section of Gannett Fleming Corddry & Carpenter. M. E. Fiore, of Parsons Brinckerhoff Hall and Macdonald, was consultant for the New Jersey Turnpike Authority, and Morris E. Goodkind for the New Jersey Highway Department.

The prestressed beams were fabricated by the Formigli Architectural Stone Co., Philadelphia, Pa.



Motorola 2-Way Radio is the ideal communication tool for highway construction and maintenance

More and more highway departments are discovering the efficiency and profit advantages of Motorola 2-way Radio on the job!

Rugged-built radio at its best, always reliable, and ready for the next call, Motorola keeps expensive equipment and personnel moving on schedule, eliminates stalls, break-down delays, dead-mileage and countless barrels of waste fuel. Measure these things from the standpoint of operational economy and you quickly see that no department can afford to be without it!

Get the facts straight from a fully qualified Motorola engineer located in your vicinity. He'll show you why it doesn't cost—but pays—to operate your own Motorola radio communications system.

national
Motorola 2-way Radio
service

Motorola Communications & Electronics, Inc.
A SUBSIDIARY OF MOTOROLA, INC.
4501 W. Augusta, Chicago 51, Illinois • Rogers Majestic Electronics Ltd. Toronto, Canada

ENR staff photos

After hewing a site out of a wooded British Columbia wilderness . . .

Kitimat workers will have a planned town

Serving the new Canadian aluminum plant. It is being built in wilderness area for 6,000 people now, 50,000 ultimately.

L. L. Wise
Associate Editor

Almost daily, workers at the Aluminum Company of Canada's new Kitimat, B. C., plant (ENR, Aug. 12, 1954, p. 32) are moving into permanent homes in an area that has hardly had the rough edges of an isolated wilderness knocked off.

Located on a deep, inland fiord near British Columbia's Pacific Coast, Kitimat is 400 miles north of Vancouver. This site for a smelter and town was selected basically because of its nearness to a source of hydroelectric power, but it is also literally the only undeveloped space north of Vancouver where enough relatively level ground is available for a huge industrial installation and its accompanying city. Fortunately its climate is not one of extremes, except that its rainfall does average 80 in. a year.

A distinctive thing about Kitimat is that its inhabitants and not the company will own the homes, the commercial enterprises and the city facilities. Alcan is determined not to run a company town, which it tried for a few years at its Arvida plant in Quebec without much satisfaction. The company, therefore, has encouraged the formation of a legally constituted municipality at Kitimat, recognizing that development will take longer this way, but certain that it will result in greater worker contentment in the long run.

• **The plan**—First step in developing the town of Kitimat was to formulate a town plan. This was a challenge to all concerned—not many planners have the opportunity of laying out, from scratch, a town for 50,000 people. But even more important than the ultimate development was the fact that the town had to be a workable entity at growth stages corresponding with development of the aluminum smelter (see table at right).

Planners were retained by Alcan as early as 1951. Clarence S. Stein was designated as co-ordinator and director of planning. Actual details of the plan were executed by Mayer & Whittlesey, architects and engineers of New York City.

The town is located six miles from the plant on rolling foothills varying in elevation from 50 to 600 ft, and the plan calls for its development in 10 neighborhood communities. Each area will have a neighborhood shopping center and elementary schools. In general the major elementary school in a neighborhood is located next to the shopping area. And the school facilities are aimed at providing extensive recreation facilities as well. Thus, each area will be almost independent.

Population density will be from 3 to 5 families per acre of land suitable for building. This includes land for streets, parks, schools and shopping centers, but excludes land in excess of 10% slope. Schools are situated for a maximum walking distance of ¼ mile for primary school children (up to third grade) and ½ mile for ele-

mentary school children (fourth to sixth grades).

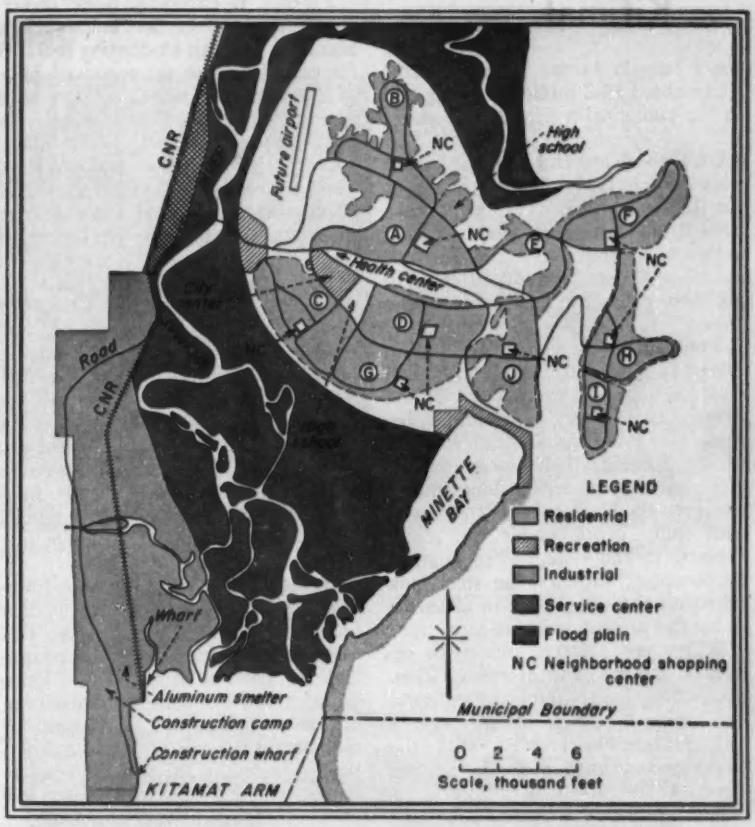
The neighborhoods are interconnected by a system of express boulevards. No houses will front on the boulevards. Instead homes will be on local streets that are almost entirely loops or cul-de-sacs. And most houses will face away from the streets with "sidewalks" located in what one would normally consider the back yard. Thus pedestrian and auto traffic are almost completely separated.

Major department stores and other facilities to serve the entire city will be in a city center that is at the focal point of the express boulevards.

Finally, there is a town service center situated across from the Kitimat River in the neighborhood of the site of the Canadian National Railroad station. Here will be located building materials yards, auto repair shops, bottling plants, newspaper and printing plants, and other services that are best located away from residential districts.

Currently being developed is neighborhood "A". With 1300 home sites, this area will be more than adequate to take care of first stage of the smelter development, which contemplates about 1000 employees, with a total town population of about 6000. Following next in order of development will probably be at least part of neighborhood "C". This is a departure from the recommendations in the master plan that neighborhoods be developed in alphabetical order, but is in line with the philosophy of the planners that the plan serve as a guide for development and not as a detailed blueprint. The plan has been followed quite faithfully in initial development work, but, as Kitimat develops further, situations are bound to arise that will lead to further deviations.

The plan was completed early in 1952. Construction that year included the main road to the town plus some clearing. In 1953, a permanent bridge across the Kitimat River was built and work started on utilities and homes.



KITIMAT PLAN is aimed at developing a complete town at all stages of growth. Neighborhoods will be undertaken in alphabetical order. Town area includes aluminum smelter. Thus, Aluminum Company of Canada will be the major taxpayer contributing to developments planned by townspeople.

• **Town government**—In keeping with Alcan's desire to make Kitimat an open town rather than a "company town," a municipal government was established relatively early. Incorporation of the area as a District Municipality took place March 31, 1953, and the first council was elected a month later. The town boundaries include the aluminum smelter and encompass a total area of 66 square miles.

Initially, and even today, there are relatively few qualified voters. A voter must be a 21-year-old British subject with six months residence in the municipality. And to vote on money matters or run for office, a voter must be a property owner.

The municipality now has a full-fledged staff in operation including a city manager, finance officer, city engineer, assistant city engineer, building inspector, part-time solicitor, two stenographers, a 3-man refuse collection force, a waterworks foreman and an outside inspector.

Responsibility for developing such utilities as roads, sewers and water lines now rests with the municipality. To get the city started, however, Alcan took the initiative on the construction of a permanent bridge, the initial phase of the waterworks system, the initial phase of the main sewer system including outfall and some laterals, the main roads to service the first neighborhood and some storm sewers.

The municipality has voted to purchase these Alcan-constructed facilities for which a $3.3-million bonded indebtedness has been incurred. In actuality, Alcan will pay for most of the works as the aluminum smelter is the largest taxpayer in the community. When the town is completely developed, the smelter will total some 80% of the assessed valuation.

Purchase of facilities constructed by Alcan required a special enabling act of the provincial legislature. Municipalities in British Columbia cannot ordinarily buy bridges and roads already constructed. Actually, the town

(*Continued on page 42*)

Kitimat will grow in stages—regulated by addition of potlines to the aluminum smelter

Aluminum Potlines	Alcan Employees	Other Basic Industry	Kitimat Population
2	1,000	—	6,000— 7,500
4	1,800	600	12,000—15,000
8	3,400	1,200	23,000—25,000
12	5,100	1,200—1,800	35,000—50,000

. . . Kitimat

got a bargain in the bridge. It cost Alcan about $1.2 million and was sold to the municipality for $1 million.

• **Utilities**—Water for Kitimat comes from a well field near the banks of the Kitimat River. Two wells have been drilled and more can be added as needed. Pump houses for the wells are situated on elevated platforms to get them above the flood plain of the river.

The water system includes a main line of 16-in. dia steel pipe and branch lines of 6-in. cast iron pipe. Bolted joints were adopted at Kitimat because they are easier and faster to lay, there is some flexibility in their alignment, and work can be done in wet weather. Pipelines have 4 ft of cover, with more depth under the roads. Pressure in the system is maintained by pumping, with a 1-mg steel tank riding on the line 100 ft in elevation above the present townsite area.

Sewers are concrete pipe with cemented joints. The outfall is 36-in. dia and discharges direct to the river after the sewage passes through a comminutor. No further treatment is contemplated until after the second stage of the town development is passed. A separate system of main storm drains is also being installed.

So far no roads in the townsite area are paved. Development of the main roads providing access to the first neighborhood was undertaken by Alcan. These roads have been sold to the municipality. Paving will probably be undertaken during 1955 after full settlement has taken place.

Roads in the housing area are being built by the home building contractors as part of their development costs. Additional roads will be built either by developers or the municipality as the need arises.

• **Home building**—Bottleneck is construction of homes. Alcan has worked out agreements with two contractors to build a total of 480 dwellings units. Financing of the construction is arranged by the contractors with Alcan providing second mortgages to their employee purchasers. The company has also agreed to buy any homes that are not sold.

Reason for the second mortgage is that houses are more costly to build. What would be a $10,000 house in Vancouver costs about $14,000 in Kitimat. On a typical $14,000 house, the 5% down payment plus a 5½% 25 yr "defense workers" first mortgage would cover $10,000 of the cost. The remaining $4,000 would be covered by a 5½%, 10-year, second mortgage.

Further, to encourage home ownership, Alcan gives its employees a bonus for 10 years amounting to $2.85 for each $1000 of the approved price of the house. And Alcan agrees to repurchase the house at a slightly depreciated value (averages just above 2% a year) should the employee leave Kitimat during the first 10 years. Net effect of all this is that the employee would be spending the equivalent of $65 a month.

First home building in Kitimat started in late summer of 1953. An agreement was made with N. W. Hullah Const., Ltd., for 50 homes. Hullah also contracted for the first water lines, sewer lines and roads for this area plus some main lines. First of these houses was not completed until March, 1954. The entire group was finished and occupied by midsummer. Meantime, Hullah agreed to build an additional 130 dwelling units.

Just starting to build houses is Johnson-Crooks of Portland, Ore., which hopes to finish 300 homes yet this year. This firm built an almost equivalent number in Anchorage, Alaska, during the 1953 construction season.

Not all the houses being built by Hullah and Johnson-Crooks are single-family dwellings. Many of them are duplexes, and a large number are row houses with up to four units in one building. These will be offered for sale by units to individual purchasers.

Some of the plant workers are in the process of purchasing lots to build their own homes—either with their own labor or through a contractor. Alcan's second mortgage agreement will hold for these people up to a $16,000 valuation.

Meantime, there are some temporary facilities available for families in the construction camp area. Here there are 100 family dwellings, a trailer camp and dormitory space. However, Alcan makes it clear to employees coming to Kitimat that temporary facilities are available only for a limited time. Thus, permanent employees with families are virtually forced into some form of home ownership.

Aluminum Co. is also doing all possible to encourage private enterprise to establish commercial facilities at Kitimat:

Two banks presently have branch offices; builders supplies come from a local concrete products company and a building materials firm; a store building is going up in the neighborhood shopping center, major tenant will be a food market expecting to open for business late this fall; Hudson's Bay Company is already operating a store in the construction camp area. And negotiations are under way for such additional things as a movie theater.

At present only access to Kitimat is by plane or boat. Late this fall, the Canadian National Railroad will complete a 42-mile line from Terrace, B. C., connecting with its main transcontinental route through Edmonton and Prince Rupert. Meantime, the provincial government is studying the feasibility of constructing a highway connection between Kitimat and Terrace. Surveys, partly financed by Alcan, are just being completed. But no definite date has been set for start of construction.

• **Kitimat's first officials**—First reeve (equivalent to mayor) of Kitimat is William H. Sparks. He was elected along with six councilmen in April, 1953. Sparks, at the time, was an assistant resident engineer for Alcan. He is transferring to the permanent operating force to serve in the property department.

Sparks is a long-time British Columbia civil engineer. He served for seven seasons on the location surveys made by the British Columbia Department of Lands & Forests that led to the development of the huge aluminum installation. During the war he was a construction engineer with the RCAF. After the war he lived for a number of years in Kamloops, B. C., where at first he represented the Department of Land & Forest, later he became city engineer, and after that he had his own practice.

One of the first full-time municipal employees retained was City Manager Cyril McC. Henderson. A native of Los Angeles, Henderson was educated in England. After the war he received a degree in town planning from Massachusetts Institute of Technology. His most recent position before coming to Kitimat was as planning director for the City of Modesto, Calif.

Many others are vitally concerned with the development of the town of Kitimat. Alcan still maintains close contact in the work through, for example, J. E. Dudley who heads up the Kitimat planning staff.

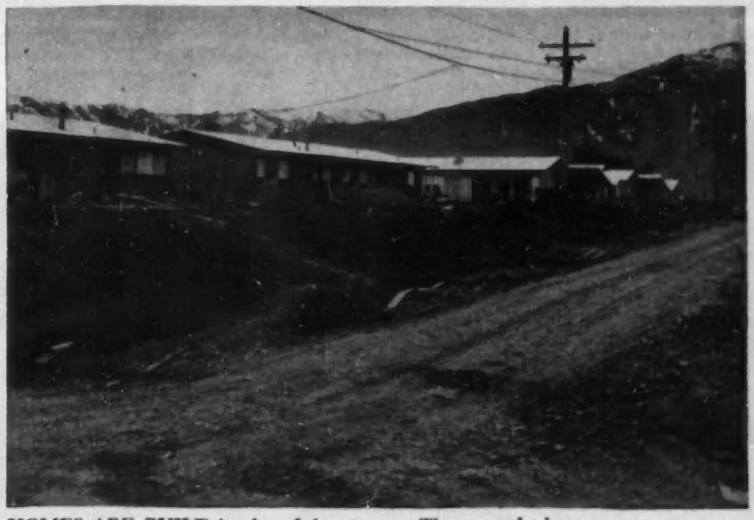
Development of property at Kitimat is overseen by the plant property department headed by George Melrose who for many years served the British Columbia government reaching the position of deputy chief of the Department of Lands & Forests. Top Alcan officials in the West also maintain close check on development of the town as success of the plant operation is directly contingent on the welfare of operating personnel. Heading up the British Columbia Project for the Aluminum Company of Canada, Ltd., is P. E. Radley. Works manager is A. C. Turney.

How Kitimat looks today . . .

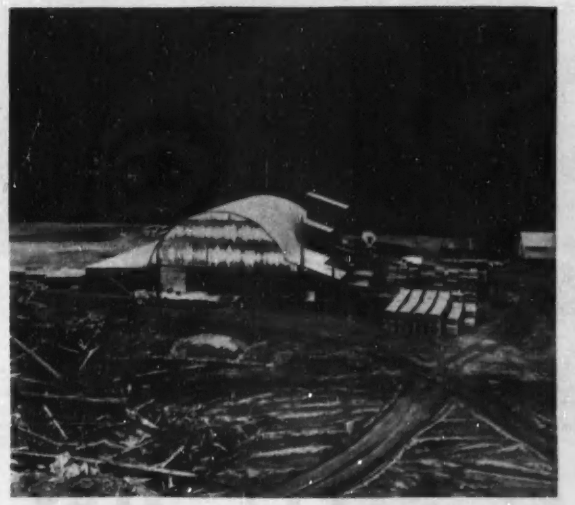
THIS WILL BE a city street. Clearing is expensive, grading routine.

PUMP house is above flood level.

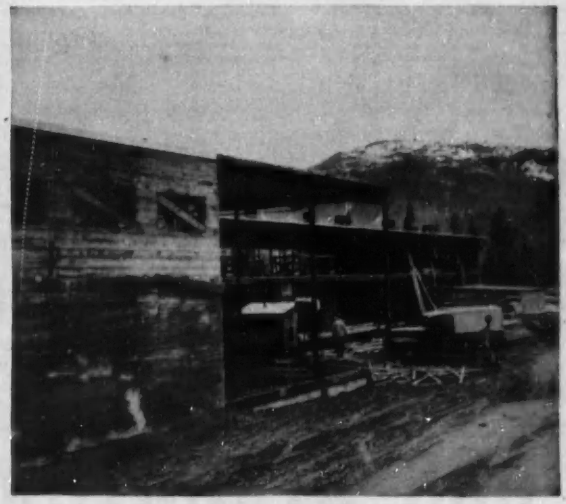
BRIDGE joins town and smelter.



HOMES ARE BUILT in cleared forest area. These are duplexes.

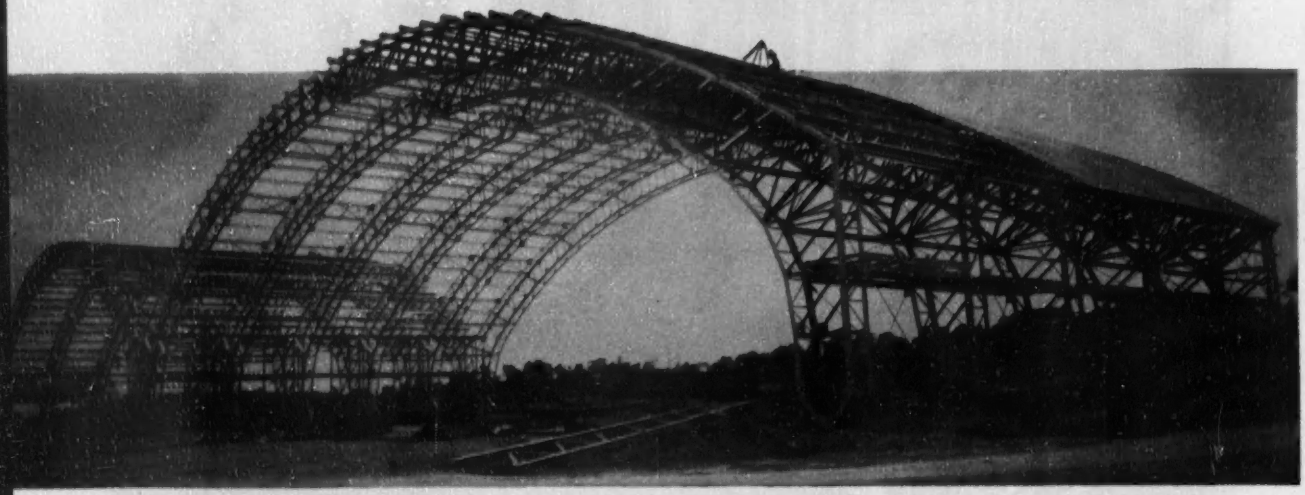


CONCRETE products plant, one of early private businesses.



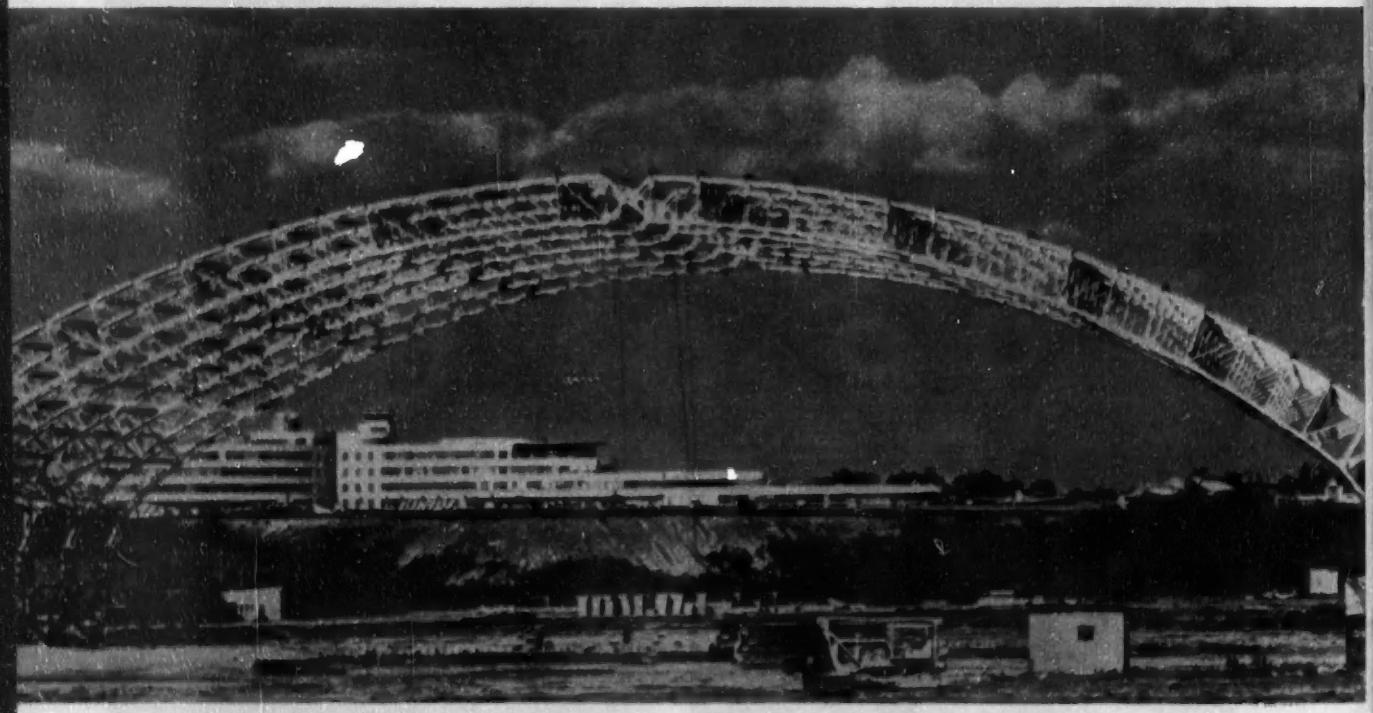
STORE BUILDING is first unit of shopping center.

Three-hinged boxed arches



EACH HANGAR ROOF is supported on 6 three-hinged trussed arches. The arches have a depth of 8 feet at the base and crown, and a depth of 14 feet at the eaves. Rise at midspan is 76 feet.

The twelve arches, purlins and bracing were erected in about 9,200 man-hours. Each complete arch assembly weighed 42 tons exclusive of purlins, bracing and sheeting.



THE HANGAR SUPERSTRUCTURE and doors were designed, fabricated and erected by Ideco Division, Dresser-Stacey Co., Columbus, Ohio, in co-operation with Leland W. Cook, consulting engineer, and Joseph Hoover, consulting architect—both of Pittsburgh. Steel erected by Elwin G. Smith & Co., Pittsburgh. General Contractor was Allegheny Building Co., Pittsburgh, Pennsylvania.

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS STRUCTURAL STEEL

USS

4-1825

UNITED STATES STEEL

# of Structural Steel set span record of 278 feet

THE MAIN STRUCTURAL FRAMEWORK for Greater Pittsburgh Airport's new double hangar, costing $2,250,000, consists of two sets of 278-foot clear span arches – the longest ever built using a three-hinged steel boxed trussed arch design.

The completed multi-span hangar is an overwhelming 589 feet wide by 180 feet deep, including a 40-foot lean-to in the rear. Total hangar area amounts to 74,000 square feet, plus 26,000 additional square feet for office and shop space. The huge structure is heated completely with unit space heaters. Fire protection is provided by fire curtains under the roof line, and a sprinkler system.

The three-hinged steel arch design was chosen for the main structural framing of the hangar since it proved to be more economical, easier to erect, and more suitable when soil conditions for the foundation were considered. But all this is an old story with Structural Steel. It's a well-known fact that USS Structural Steel is the most economical of load carrying materials—in addition to being the strongest. It will withstand more abuse than other structural materials, effectively resisting torsion, shear, tension and compression. Enclosed in buildings, it will last indefinitely—requiring no maintenance.

Structural Steel is equally adaptable to riveting, welding or bolting—can be erected in any weather in which men can work. And since steel members are fabricated indoors, weather can have no effect on the quality of workmanship. For further information, write to United States Steel Corporation, 525 William Penn Place, Room 4442, Pittsburgh 30, Pennsylvania.

ROOF AND WALLS of the huge hangar are made of deep-ribbed galvanized copper bearing light-gage steel. The electrically operated, 14 leaf doors roll open to provide a 255 x 40-ft. clear entrance.

ARCHITECTS . . . ENGINEERS

The Structural Steel you need is available – NOW! No waiting is necessary. Place your order and prompt delivery is assured.

Photo by Barrett

Not a bowl for ball games, but a water basin for Southern California, Garvey Reservoir . . .

Fill laid fast with small diameter rollers

Garvey Reservoir in Monterey Park, California, has been a fast earthmoving job. A big, earth bowl—cut out of a hilltop, with two of its sides compacted earthfill—it will be finished next fall, months ahead of scheduled April, 1955, completion.

Joint-venturers Morrison-Knudsen and R. A. Westbrook will have moved 3,600,000 cu yd of earth under their $3.2 million contract. And the speed with which they have worked has pleased both the contractors and the Metropolitan Water District of Southern California. The Garvey Reservoir project is a key part of the water district's $52 million worth of expansion that is due to be finished a year from now.

The big earth bowl has been hewn out and built up on its sides in a 10,000-cu yd per day earthmoving and compacting operation. On their biggest day, the contractors put down 17,400 cu yd of compacted fill in a 10-hour shift, using seven sheepsfoot rollers on fill moved in by ten 15-cu yd carrying scrapers. Generally, during 14 months of earthmoving, there were eight scrapers laying down dirt for seven rollers nine hours each work day.

• **Compacted soil**—For compaction of the impervious earthfill, especially designed small-diameter, heavy-weight rollers have been used. Each roller unit weighs 30,000 lb; 3,000 lb per linear foot of drum. The theory here is that compactive effort is proportional to drawbar pull; drawbar pull is greater as roller drum diameter decreases and weight increases. This is the theory of Ralph R. Proctor, field engineer and soils specialist of the City of Los Angeles Department of Water and Power, who was consulted by the Metropolitan Water District on the Garvey project.

It is figured that the small diameter, heavy rollers put 25,000 ft-lb of compactive effort into the soil in 16 passes of the roller; and 16 roller passes do the desired compaction job on the particular soils here encountered.

With rollers moving 3 mph compacting soil into 6-in. lifts, it is possible for each roller unit to produce 200 cu yd of acceptably compacted material each hour. Fill samples are continually compared with samples manually compacted to desired density in the laboratory as a check on field results. Density of the compacted embankment ranges from 122 to 140 lb per cu ft dry weight.

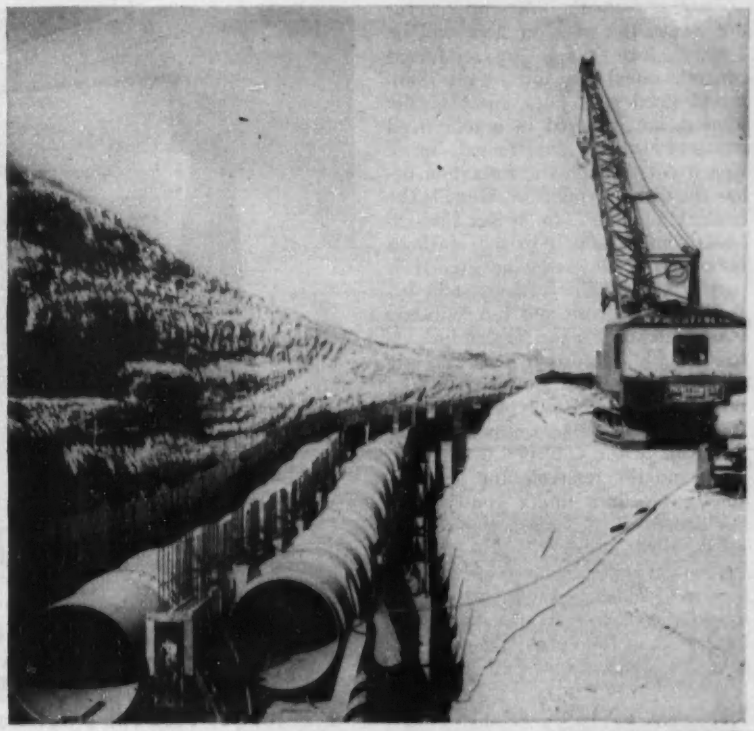
[A minimum requirement for control of compaction is an indicated penetration resistance (Proctor needle) of 300 lb per sq in with the compacted material in the saturated state. The greater part of the excavation is in a formation of silt, sand, gravel, and clay (known as Saugus gravels). The northern part of the excavation is underlain by materials resembling in composition the sandstones (known as Pico Siltstones), and the Saugus gravels are interspersed with lenses of these siltstones.]

Building this 2,000 x 1,200-ft oval has been a considerable fill placement project. In spite of the fact its finished depth will be but 60 ft, there is a 170-ft high fill, 1,100 ft long, along one side of it.

The bowl is now having its inside slopes (3:1) and bottom smooth-rolled and protected with a 3-in. asphaltic concrete paving.

• **A distribution aid**—As a distribution element in the vast MWD system, Garvey Reservoir will hold up to 489 mg (1,500 acre-ft) of water at 570 ft above sea level. It will bolster distri-

INLET-OUTLET TOWER will control flow to and from Garvey Reservoir.

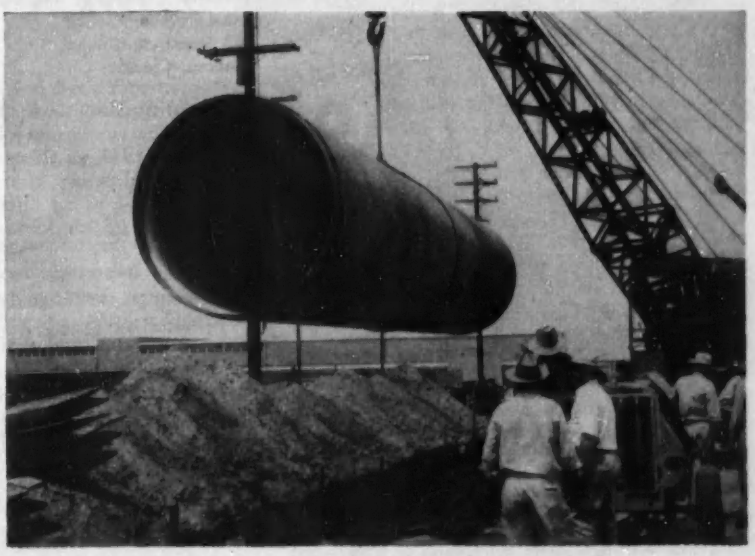


UNDER EMBANKMENT a reinforced concrete gallery carries twin mechanically-jointed steel lines.

bution of Colorado River Aqueduct water to Compton, Torrance, Long Beach, and West Basin Municipal Water District, as well as the fast-growing industrial areas of southeast Los Angeles County, the so-called Central Basin Area between the Los Angeles city line and Orange Counties.

In addition to Garvey Reservoir some 73 miles of 36- to 108-in. distribution system pipeline are being installed in Los Angeles, San Bernardino and Orange Counties. Current MWD expansion includes also a $12.5-million addition of 10 pump units, 2 new units at each of the five Colorado River Aqueduct pumping plants. After installation of the new units the plants will each have 5 of its ultimate 9 units planned. This will raise the aqueduct's pumping capacity to 1,000 cfs, from about 600 cfs. (Ultimate capacity of the aqueduct is 1,800 cfs.)

In addition to the facilities being constructed directly by the district, an $18-million second barrel for the 71-mile aqueduct to San Diego, now essentially completed, is being constructed by the U. S. Bureau of Reclamation for the U. S. Navy, with the Navy to be repaid in full (plus interest) by the MWD of Southern California and the San Diego County Water Authority. The district operates, and ultimately will acquire, the north half of the San Diego Aqueduct.



ON DISTRIBUTION SYSTEM both steel and concrete pipe are going in to make up 73 miles of new grid system for distributing Colorado River water.

MWD's major terminal reservoir is Lake Mathews, 40 miles east of the new Garvey Reservoir, at the west end of the 242-mile aqueduct from the Colorado River above Parker Dam. The present usable storage capacity of Lake Mathews is 104,000 acre-ft, indicating that the new Garvey Reservoir is but an operating device with its space for only 1,500 acre-ft.

• **In distribution system**—Water will enter and leave Garvey Reservoir through two 72-in. mortar-lined welded steel pipelines extending from a combination inlet-outlet control structure. This is an 80-ft high circular tower standing in the reservoir's east end with a steel footbridge for access from the crest of the embankment.

(*Continued on page 48*)

Leading from the inlet-outlet tower out across the reservoir floor will be 1,800 lin ft of 51 and 72-in. reinforced concrete circulating lines. Two 72-in. mortar-lined steel lines, mechanically jointed, are enclosed in a reinforced concrete gallery constructed in a trench cut through the formation below the east embankment. Outside the embankment, a 72-in. feeder line extends south 1,000 ft to the southern boundary of the reservoir site. It is part of the middle feeder system between the reservoir and the southerly coastal areas. A 60-in. feeder line extends 1,500 ft north within the site as part of a 6-mile cross-feeder connecting Garvey Reservoir with the existing MWD system near the Ascot Reservoir of the City of Los Angeles.

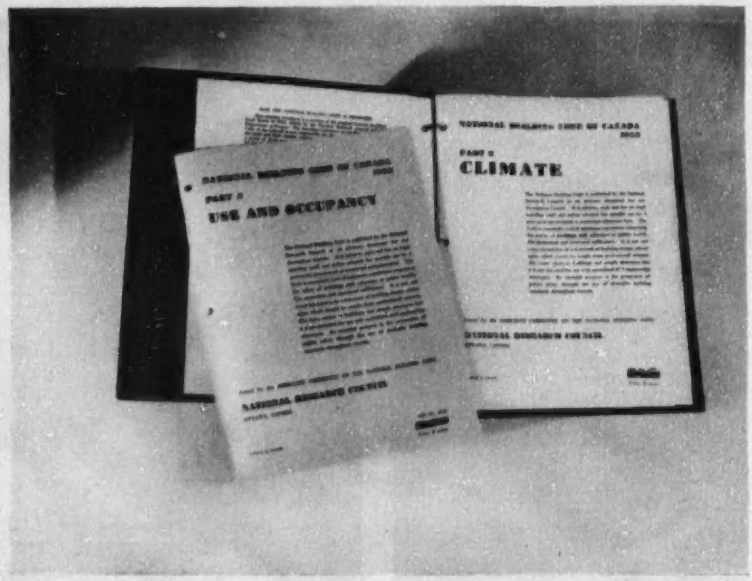
Beyond the reservoir, the large diameter pipelines under construction and proposed will form new grid lines in the existing distribution system. Precast concrete pipe and welded steel pipe with spun mortar lining and reinforced mortar exterior coating are both used in the current 73-mile distribution system expansion.

• **Big pipe contracts**—Among the larger pipe contracts, the $2 million Garvey-Ascot cross feeder, 60-in. reinforced concrete pipe, was finished late last year by Ukropina-Polich-Kral & Rados. The same contractor is now over 75% done on two more 6-ft diameter portions—one an $850,000 contract in concrete (11,470 ft) and the other a $2.9 million welded steel job (31,023 ft).

John A. Artukovich Sons, Inc., has completed a million-dollar contract for 21,315 ft of 45 and 54-in. concrete pressure pipe. P. & J. Artukovich, Inc., is more than 85% done with laying 40,990 ft of 72-in. mortar lined welded steel pipe for $3.2 million. A $1.5-million contract which has been assigned to Vinnell Company, Inc., for 45,807 ft of 42-in. mortar lined welded steel pipe has just reached the laying stage, welding and lining having progressed some months now.

Robert B. Diemer, general manager and chief engineer of MWD, is responsible for the agency's $52-million expansion. Rober A. Skinner, assistant chief engineer, is in charge of all design features of the projects. In supervisory charge of construction operations at Garvey Reservoir and along the several pipeline contracts is Henry J. Mills. And at Garvey Reservoir, MWD's resident engineer is W. S. Merrithew.

For the contractor combine of Morrison-Knudsen Co., Inc., and R. A. Westbrook, D. J. Westbrook is project superintendent at Garvey.



The latest in building codes

Canada's new national code is arranged for easy revision —unique sections on climate and on use and occupancy

R. F. Legget
Chairman, Associate Committee on the National Building Code
National Research Council
Ottawa, Canada

The new National Building Code of Canada, while basically a revision of the one published in 1941, is an entirely new document differing completely in form—and to a not inconsiderable degree in content—from its predecessor.

Perhaps the most important feature is its arrangement in separate pamphlets so that revision of any one part can be undertaken and that part reissued independently of the rest of the code. Other departures from precedent are represented by a section on climatic factors, an overall use-and-occupancy section and the omission of a section on fire prevention in favor of consideration of this subject in each section where it is relevant.

The new national building code is an advisory document only, made available for the use of municipalities throughout the country.

Neither a performance nor a specification code, but including the more desirable elements of both, the code is issued by the Associate Committee on the National Building Code of the National Research Council. The committee is a body of about 20 representative Canadians who are responsible under the Council for all work on the code, the Council itself being an honorary and advisory body of 20 distinguished Canadian engineers and scientists.

The new code is, therefore, a truly national document, but it is in no sense a product of the federal government.

Secretarial and technical work for the Associate Committee is carried out within the Division of Building Research of the National Research Council. In this way all work on the code is kept closely in touch with modern building practices. Correspondingly, problems which the use of the code reveal and which call for research can be directed to the national agency set up to handle such research problems in the field of building.

• **Continual revision planned** – The functions of the Associate Committee are to promote uniformity of local building regulations across Canada and to maintain the national building code as a "living" document. It is concentrating on the second task as the best means of performing the first.

The success that has attended the use of the 1941 document gives grounds for hoping that the new code will soon be in wide use throughout Canada and by almost all major Canadian cities. Ten thousand copies of the original code have been issued,

(*Continued on page 50*)

The Disappearing Act that never fails

A billion-mile network of buried faith lies stretched across America. It's Vitrified Clay Pipe — the product that disappears underground . . . and *has* to be trusted. Clay Pipe is sealed in by streets and sidewalks . . . blocked off by building foundations . . . piled over with earth and rock.

Everybody trusts it, because Clay Pipe has a vital job to do, and it must not fail. Yet — nobody worries about that vast underground network of sanitary protection. Few people even think about it. What greater tribute could be paid to a product's dependability?

Of all the materials that are used in the construction of modern homes and cities, none is more essential than Vitrified Clay Pipe. It disappears underground, so it's got to be good. It guards against disease, so it's got to be good. It gets no maintenance, so it's got to be good.

And you know it *is* good, because it is guaranteed for 50 years. It's the only pipe that *never wears out,* and the Clay Pipe Industry is mighty proud of it.

Vitrified CLAY PIPE

NATIONAL CLAY PIPE MANUFACTURERS, INC.

1520 18th St. N.W., Washington 6, D. C.

206 Connally Bldg., Atlanta 3, Ga.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio

D-5114

and it is used as a reference document by over 600 municipalities in Canada, and is in active use by over 200.

The arrangement of the new code was developed following a year's study of building codes in general, after it had been found that most of the problems that arose in the use of the original code were caused by arrangement rather than content.

The basis of the new arrangement is to put first things first and then subdivide these major topics into those of secondary importance which, in turn, are further subdivided. This has resulted in a set of eight parts, each complete in itself, requiring little if any cross-referencing to other parts.

• **How's the weather?**—The first part deals with administrative requirements and has reference to local ordinances in allied fields. It is, therefore, the only part that may have to be changed for the use of particular municipalities. All other parts of the code are valid for all parts of Canada. This has been achieved by the inclusion of the second part, a section on climate, which includes 12 maps showing essential climatic factors for all parts of Canada including rainfall, snow loads and wind velocities.

The factual information in this small Climate Section represents the results of almost two years' work by the Climatologist of the NRC, Division of Building Research.

It was found that his studies produced such valuable information that a supplementary Climatological Atlas of Canada has been produced jointly by the Council and the Meteorological Service of Canada. This Atlas contains almost 90 maps and a number of diagrams showing the average climate for all the leading cities of Canada.

• **New departure**—The third part of the new code represents another departure from traditional codes in that it includes all the requirements for buildings, which are dependent upon use and occupancy, irrespective of their type of construction. For example, all the special requirements of such building types as hotels and restaurants are given in this part, and they must be applied whether such buildings are constructed in steel, concrete or wood.

Part four is concerned with the actual structural design of buildings, the first section dealing with general design requirements.

Additional sections deal with excavations and foundations, design in wood, structural steel and reinforced concrete, requirements for plain concrete and for masonry construction and finally a section that deals with "cladding." This word is used to describe the surface finishes that must be applied to the inside and outside of building frames, both walls and roofs.

The fifth part is a compilation of complete references to all the specifications to be used to detail all ordinary building materials. Specifications for the methods of testing building materials are also included.

This and other parts of the new code have been correlated closely with publications of the Canadian Standards Association so that there are in Canada today single national standards for all the matters of design covered by the code.

Part six deals with general services —heating, ventilation, insulation, and other services (except plumbing)—to be fitted into a building after the structure is complete. Plumbing is of such importance that a special part (7) has been devoted to it. This plumbing section was developed jointly with the Canadian Advisory Committee on Public Health Engineering so that it represents the national standard for plumbing installations.

• **Construction safety**—The last part deals with construction safety measures, and details the steps to be taken in order to make construction operations safe, not only from the point of view of the public but also for all those engaged on the construction job. In view of the importance to construction workers, it has been produced as a pocket-sized pamphlet in addition to the usual standard letter-sized form used for the rest of the code.

• **How the code was developed**—The work of preparing the new document was carried out by 10 main technical committees and 17 special technical panels. Almost 200 builders, architects, engineers, building officials, trade unionists and others interested served voluntarily and willingly on these committees.

The Associate Committee was especially glad to have the assistance of two American experts on the Climate Committee in order to insure the integration of the Canadian maps with similar work being done in the United States

Drafts of each part or section were circulated throughout Canada for comment. Over 2,000 individual comments were received, and all were considered by the respective committees. The work has taken about four years. The National Research Council assumed only necessary traveling expenses.

One special feature of the Canadian code organization is that, although building officials are included on all the technical committees and have assisted greatly in the preparation of the new document, no municipal building official is ever appointed as a member of the Associate Committee on the National Building Code itself. The local building inspector can therefore refer to the national code as a document produced by a completely independent body with no local interests.

This is in keeping with the old Anglo-Saxon tradition that the policeman is never responsible for the laws which he has to administer.

It is of interest to note that the new code contains no more words than the 1941 code, despite the fact that it includes many new sections, with some sections more than doubled in length. This result has been achieved because of the research job that was done on the problem of arrangement.

As the new code is adopted for use by municipalities across Canada, its imperfections will become obvious.

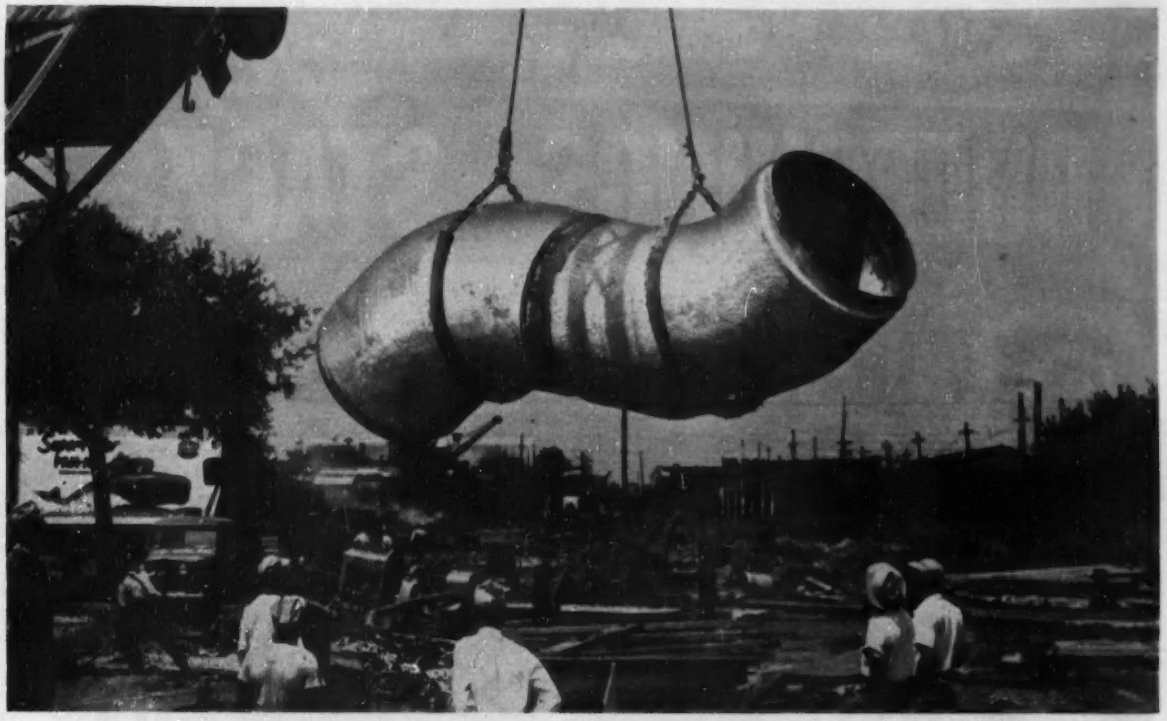
Plans are already in hand for a continuing voluntary committee organization, which will be responsible for its regular revision. Provision is naturally made for the acceptance, by local building inspectors, of methods and products not specifically covered by the code. This introduces the question of performance tests and the rating of such tests, a matter to which the Associate Committee is now devoting its attention.

Full information on the procurement of copies of the code in its several forms and of the Climate Atlas may be obtained by writing to the Secretary, Associate Committee on the National Building Code, in care of the National Research Council, Ottawa.

Symposium on solar energy planned for early 1955

A World Symposium on Applied Solar Energy will be held next January 12 through 15 under the leadership of Stanford Research Institute. At the meeting, representatives of the construction industry will hear reports on the use of solar energy for heating water, space heating and cooling. Several systems for such applications have appeared practical.

The symposium will be under the general chairmanship of Lewis W. Douglas, former ambassador to Great Britain and chairman of the board of the Southern Arizona Bank and Trust Co., Merritt L. Kastens, assistant director of Stanford Research Institute, is vice-chairman. Headquarters will be the Westward Hotel in Phoenix, Ariz.



Special curved section of 50-in. ID Bethlehem Pipe being lowered into trench in New Orleans.

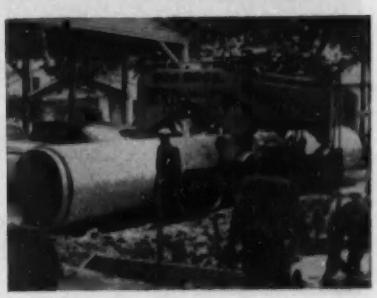
New Orleans Modernizes Water and Sewerage System with Over 94,000 Feet of Bethlehem Steel Pipe

To meet greatly increased demands caused by the city's tremendous post-war growth, the Water and Sewerage Board of New Orleans has installed almost 18 miles of large-diameter water and sewage lines.

This project began in 1948, when the Board accepted Bethlehem's bid to furnish about 13,500 feet of 50-in. ID tar-enameled steel pipe for the first section of a new feeder line. Today, New Orleans boasts nearly 60,000 feet of new 50-in. ID water mains, as well as 35,000 feet of sewage lines in diameters ranging from 24 in. to 50 in. ID. All of this pipe, together with a variety of T's, bends, reducers and flanges, was supplied by Bethlehem.

You'll find Bethlehem Tar-Enameled Pipe ideal for your water and sewage lines. It has great strength, shock-resistance and resilience. And its smooth, uniform lining of coal-tar enamel resists corrosion and incrustation, ensures a high rate of flow year after year. It is furnished in easily-handled 40-ft lengths, and in all diameters from 22 in. ID to the largest permitted by common carriers.

We suggest that you phone or write the nearest Bethlehem sales office for complete information about Bethlehem Tar-Enameled Steel Pipe.



Laying straight section of 50-in. ID pipe. Engineers on the job found the Bethlehem Pipe easy to cut and re-weld when obstructions were encountered.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM *Tar-Enameled* STEEL PIPE

BREECHINGS · STACKS

AIR AND GAS DUCTS

PLATE FABRICATION FOR POWER PLANTS

KIRK AND BLUM
FABRICATION

Whatever your requirements in fabricated plate, sheet or structurals for power plant use . . . call on experts!

Kirk & Blum has fabricated a variety of power plant needs as big as the mammoth breeching section shown here. In a 150,000 sq. ft. plant, with crane capacity to 25 tons, Kirk & Blum has complete facilities to produce, pre-assemble and load the largest fabrication. Kirk & Blum has the men, materials and experience to do the job quickly and economically.

For detailed literature, write: The Kirk & Blum Mfg. Co.
3234 Forrer St., Cincinnati 9, Ohio

Port board clears airport project—first stage will cost $11.5 million

Approval by the Oakland (Calif.) Board of Port Commissioners of a master plan for the city's "airport of the future" has set the stage for construction of an $11.5-million first phase of the ambitious project.

Designed for jets, helicopters and seaplanes, as well as conventional types of aircraft, the new airport will be built on the filled-in tidelands and mudflats of Bay Farm Island that lies off the existing Oakland Municipal Airport in San Francisco Bay.

H. W. Estep, president of the board, expects construction to get under way before the end of the year. The initial construction program encompasses a new runway, a taxi strip and new terminal area with a special section for helicopters. It is hoped that they will be in use by 1957.

The new runway, approximately a mile off the present shoreline, will be 8,600 ft long—ample for any jet plane now contemplated.

Its approaches at both ends will be over water to eliminate take-offs and landings over built-up areas with their attendant flying hazards and noise menace.

Because of its over-water approaches and a direct-line route to the Newark beacon that guides planes into the area, the new runway will, Estep says, be one of the safest in the nation.

The new terminal building will adjoin the runway at the end of a new road to be built.

• **Designed for expansion**—The three-level structures, according to board members, will compare with the best in the country. Airline operations and service facilities will occupy the ground floor.

Elevated roadways will bring passengers to the second-floor waiting room where ticket offices, restaurants, lounges and other facilities all will be in one location. Escalators will take passengers to and from the planes.

A mezzanine floor will be occupied by administration offices.

The building and its accessory parking lot both are designed for expansion without disrupting operations.

Adjoining the terminal building will be a heliport designed to provide accommodations and promote interest in what board members expect will be an important feature in air travel.

Also included in the first phase plan is a new control tower and an aviation fuel storage center.

• **Fill operations**—Key feature in the masterplan is the fill operation that will provide the site for off-shore runways. In the area east of the present Municipal Airport, planes are now required to fly a "dog-leg" course between airport and Newark beacon.

The proposed new runways will eliminate existing flight patterns that bring aircraft dangerously near a range of hills—an increased hazard to home owners in the area.

New York consultants, Knappen-Tippetts-Abbett-McCarthy, recommended acquisition of tidal lands as an important step in the development. "Rather than relying on zoning, which might take time to effectuate," says their report, "the Port of Oakland has wisely adopted the policy of first placing new runways in areas where there is the least likelihood of conflict in the future and secondly, in actually owning the land for a considerable distance beyond the ends of the new runways between one and two miles."

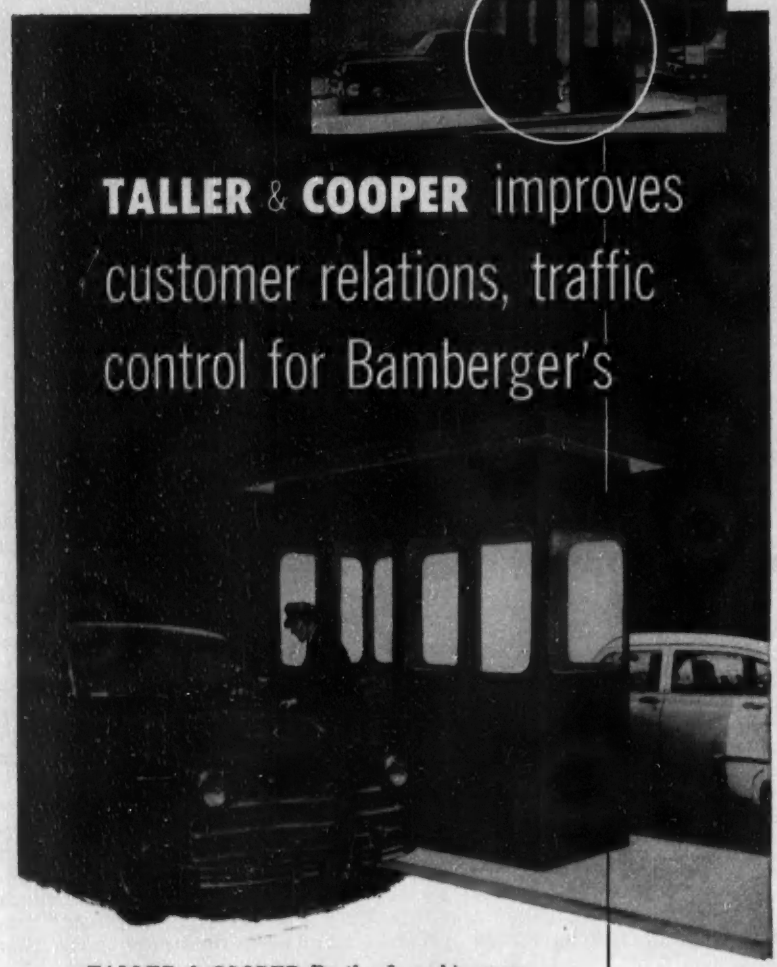
The engineers also recommended purchase of underwater lots offshore from Bay Farm Island.

More than 7,000,000 cu yd of sand will be hydraulically placed to provide foundations for the runway and terminal areas with necessary connecting ramps and roads. The areas inshore from the main structures will be available for future filling and development as hangar sites, industrial sites and a cargo terminal.

(*Continued on page 54*)

BAMBERGER'S *makes it easier to shop at their new Plainfield, N. J. branch—with this* TALLER & COOPER *Booth in the Parking Area*

TALLER & COOPER improves customer relations, traffic control for Bamberger's



TALLER & COOPER Booths & parking systems assure quick, courteous service for the customer as well as pleasant working conditions for the attendant.

Functionally designed T & C Booths are prefabricated of rugged accident-proof steel, and delivered to the site completely assembled for immediate installation. Some of the many reasons you will see T & C Booths everywhere . . . in Parking Areas, Drive-In Theatres, Industrial Plants, and on every major toll facility in the country.

WRITE TODAY for design and construction details.

TALLER & COOPER, INC.
ENGINEERS • MANUFACTURERS

TOLL BOOTHS • TOLL COLLECTION SYSTEMS

75 FRONT STREET • BROOKLYN 1, N. Y.

TALLER & COOPER COLLECTION EQUIPMENT IS USED ON EVERY MAJOR TOLL FACILITY IN THE U. S.

MUNICIPAL

The single runway is expected to meet traffic requirements of major aircraft for several years.

In the future—second stage—program, plans include a second runway that will provide for one-way traffic patterns.

In the second stage also, a seaplane channel will be dredged along with a taxiway that will bring seaplane passengers directly to the terminal building.

During construction of the new facilities, the existing airport will continue to serve, with little or no interference from construction operations. When new accommodations are ready, the old airport will provide unusually good facilities for private and executive aircraft. Thus centralized services will be available for every phase of air travel.

Need for the new runway is critical, according to the engineers' report. On the basis of CAA recommendation, the two lanes at the existing airport will be operating at capacity during peak hours by 1960. But the new runway will take care of requirements through 1970, it is estimated.

The engineers found that existing facilities were unsuitable for expansion and already overcrowded. Oakland Municipal Airport is located so as to compete with San Francisco in providing service for the greater part of a nine-county area surrounding the bay. Inadequate facilities, however, thus far have interfered with this competition.

Completion of the Richmond-San Rafael Bridge will open a large portion of Marin and Sonoma Counties to Oakland port facilities, and if a proposed southern crossing is built, the report declares, the new Oakland International Airport will be "at least as accessible to downtown San Francisco as that city's own airport."

• **Survey of traffic potential**—Potential increases in traffic at the Oakland field are presented as follows:

Passengers—	291,686 in 1953	(actual)
	625,000 in 1960	
	920,000 in 1965	
	1,150,000 in 1970	
Cargo (tons)	3,910 in 1953	(actual)
	15,000 in 1960	
	26,000 in 1965	
	38,000 in 1970	
Air carrier movements		
	84,307 in 1953	(actual)
	155,000 in 1960	
	205,000 in 1965	
	240,000 in 1970	
Total aircraft movements		
	190,104 in 1953	(actual)
	295,000 in 1960	
	370,000 in 1965	
	425,000 in 1970	

(*Continued on page 56*)

LONG WHEELBASE ACCURACY
in a compact package!

THAT little device pictured above in the circle puts the Adnun in a class far above the ordinary asphalt paver. It brings long wheel base accuracy in a compact package. With the Adnun, the Fluid Level gives you full control from subgrade to finished surface. Each course placed by the Adnun from stone base to top course will be laid to a true plane of correct thickness *the full width* of the road, mile after mile. Density is materially improved. Greater road life is assured and the waste and cost of placing excess material to guarantee correct thickness is eliminated. With the Adnun Fluid Level you supplement the amazing accuracy of Adnun Continuous Course Correction with gauge control so positive that you take out the long dips that never show under a straight edge. The effect of long wheel base and wheel control assures an accuracy and freedom from upkeep that can't be equalled by crawler machines. Ask for the booklet, "Put A Level On Your Road."

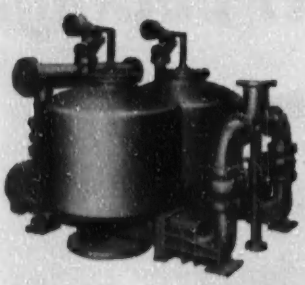
BLAW-KNOX COMPANY
FOOTE CONSTRUCTION EQUIPMENT DIVISION
1922 State Street
Hunda, New York

BLAW-KNOX

ADNUN
BLACK TOP PAVER

SEE
this amazing pump
in your office!

—the heart of your sewage collecting system



3.5 mm. full-color sound slidefilm

— takes only 15 minutes

— shows exactly how

SHONE®
Pneumatic Ejector

works—explains the importance of lift pumps in the sanitary sewage collecting system—defines the place of pneumatic ejectors and centrifugal pumps.

It's an interesting, worth-while film that gives you in a few brief moments the facts you want to have about this pump,—the simplicity of its operating principle, its long years of service. Maintenance costs are negligible. Frequent check-ups are not necessary. Records tell of one unit overlooked during remodeling work, then re-discovered some 20 years later—still operating efficiently.

See this film at your early convenience. You may want to have your associates see it also. Ideal for showing to professional associations and civic groups; for company training program, schools and colleges. Call your local Yeomans Representative listed in the Yellow Pages of your telephone book under "Pumps," or fill in coupon and attach to company letterhead.

® *Registered Trademark*

YEOMANS

YEOMANS BROTHERS CO.
1999-1 No. Ruby St., Melrose Park, Ill.

Yes, I am interested in seeing your colored sound slidefilm on sewage collecting systems and the SHONE Pneumatic Ejector Pump. Have your local representative contact me to arrange a showing.

Name .....

Title .....

Company .....

Address .....

City .....Zone....State.....

(*Continued from page 54*)

• **Financing**—Financing the first phase of construction will be accomplished through a $10-million bond issue voted by Oakland residents last year. Some federal aid funds and airport revenues also are available.

It is estimated that the new port will reach the break-even point between revenues and expenses within three years after it goes into operation in 1957.

If present plans for scheduling and operation are effected, Oakland's new airport should produce an estimated annual profit of $800,000 by 1970.

Cost estimates making up the $11.5 million first phase program include: fill, $4,890,000; new roadways, $240,000; airfield paving, $2,540,000; utilities, $560,000; drainage, $120,000; lighting, $250,000 and terminal buildings, $2.8 million.

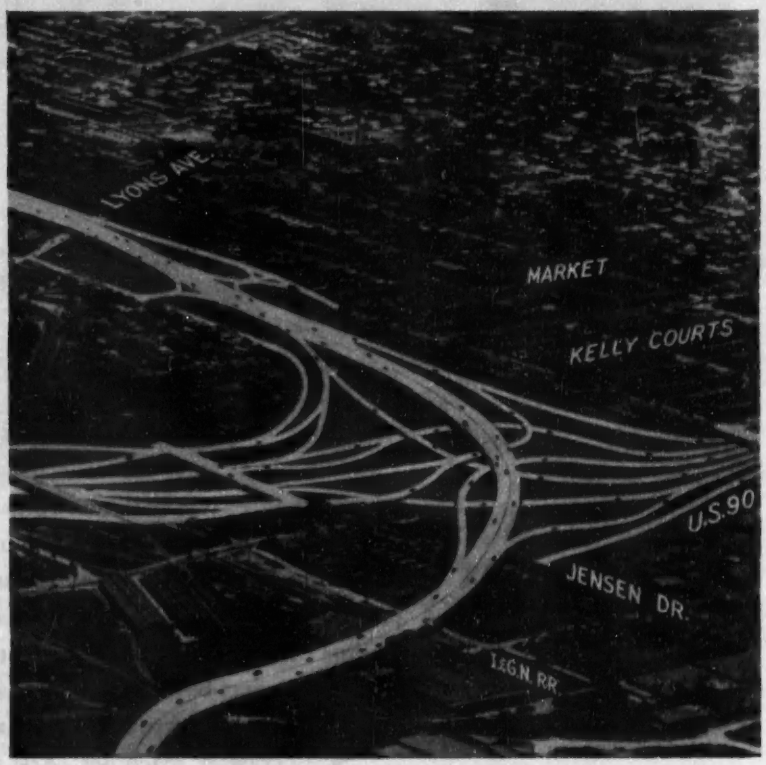
Three-year court battle ends—City will build sewage plant

Culmination of a three-year legal battle has been reached with issuance of an order by the Connecticut State Supreme Court that the city of Norwich build a $1.8-million sewage treatment plant.

By a three-to-one vote, the high court is forcing the city to comply with a State Water Commission edict resulting from alleged pollution by the city of the Yantic, Shetucket and Thames Rivers.

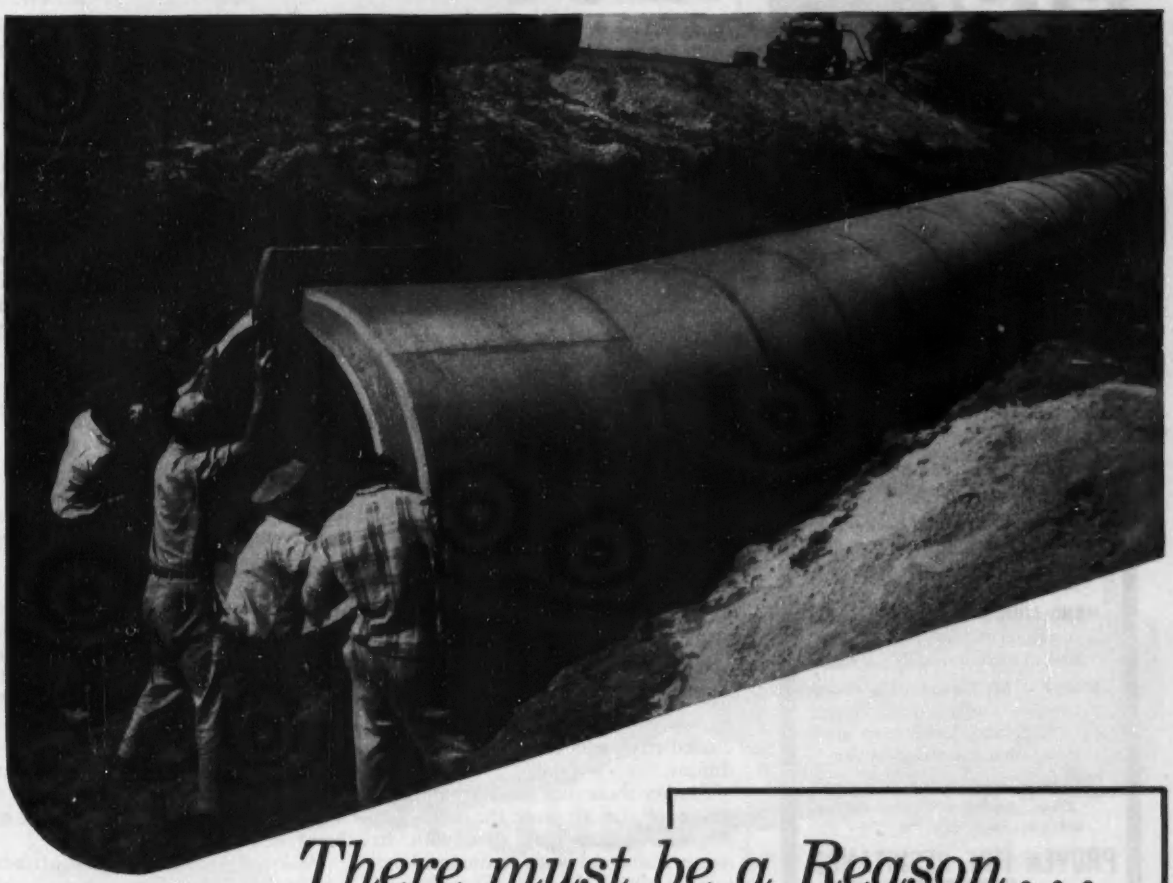
Last year, under protest by Norwich, Superior Court Judge T. E. Troland sustained the commission and ordered the city to "proceed with diligent dispatch" in the construction of the plant. In appealing to the higher court, Norwich charged that Troland

(*Continued on page 58*)



Newly approved bonds will buy Chinese puzzle

With their approval of a $23-million bond issue, Houston, Tex., voters have opened the way for construction of several freeway extensions and acquisition of rights-of-way. This spidery interchange, one of six specific projects that will be launched with right-of-way purchases totaling $8 million, will provide stop-free transition from the Eastex Freeway (US 59, coming in from upper left) to the East-West Expressway (US 90, crossing the picture from left to right). $14.7 million in state funds already have been allocated for construction work on the projects, so $12 million in bonds will purchase land, $6 million will buy bituminous surfacing and $5 million is earmarked for permanent paving.



There must be a Reason . . .

why successful contractors and engineers invariably specify Universal Vitrified — U. S. Concrete Pipe.

There must be a reason why this pipe is getting the call for so many important jobs. As a matter of fact there are FOUR reasons

1. **Product Quality.** Modern, mechanized production methods provide highest uniform quality and dependability in our products.

2. **Complete Line.** The right pipe for the job — concrete or vitrified clay in all sizes. One unbiased source of supply.

3. **Prompt Delivery.** Strategic locations of our 8 plants permit prompt shipment and keep freight costs down.

4. Fair and competitive pricing.

OWNER

Dell-Parr, Inc. (Shopping Center) Location, Intersection State Routes 2 and 50, West Annapolis, Maryland. 60" Extra Strength Reinforced Concrete Culvert Pipe C76 Table II.

CONTRACTOR

F. P. Asher, Jr. & Sons, Inc.

ENGINEER

James D. Hicks, Annapolis, Md.

PRODUCTS

Sewer Pipe (Vitrified)	Slipseal Sewer Joint	Flue Lining
Sewer Pipe (Concrete)	Segment Sewer Block	Stove Pipe
Vitrified Liner Plates	Meter Boxes	Chimney Tops
Tylox Flexible Rubber Coupled Vitrified Pipe	Ship Lap Wall Coping	Chimney Pots
Aerodrane Filter Block	Septic Tanks	Fire Brick
	Drain Tile	Fire Clay

Vitrified Clay Plate Lined Concrete Pipe

Conduit for underground steam and insulated piping

SALES OFFICES:

BALTIMORE, MD. — HALETHORPE BRANCH — Box 7769 — Tel. Elkridge 877
PHILADELPHIA, PA. — Tel. Enterprise 6015
P. O. Box 30, BRISTOL, PA. — Tel. Bristol 8-5571
CINCINNATI, OHIO — Tel. Locust 7846
P. O. NEWTOWN, OHIO — Box 215

FACTORIES:

BALTIMORE, MD., CINCINNATI, OHIO, NEW PHILADELPHIA, OHIO,
PALMYRA, OHIO (2), PHILADELPHIA, PA., UHRICHSVILLE, OHIO (2)

UNIVERSAL SEWER PIPE CORPORATION
UNITED STATES CONCRETE PIPE CO.

• ***GENERAL OFFICES*** • **1500 Union Commerce Building** • **CLEVELAND 14, OHIO**

STOP ROOF DECK FIRES

INSULATE with PERLITE CONCRETE

New test proves that unprotected metal roof decks insulated with perlite concrete will resist fire spread at least 45 minutes! Why gamble? Include this low-cost fireproof insulation in *your* roof.

INCOMBUSTIBLE – Perlite concrete cannot burn or spread fire.

NO VAPOR SEAL needed between insulation and metal deck.* This eliminates fire hazard of bitumen on exposed steel.

MONOLITHIC – Continuous slab means no multiple cracks to leak heat or molten roofing materials.

STURDY – Mesh-reinforced perlite concrete stiffens deck, shields roofing from flames even after metal deck is buckled by fire.

PERMANENT—Perlite concrete won't "give" under ordinary traffic, can't rot or decay.

PROVEN FIRE RESISTANCE

200°F ON ROOF

1650°F INSIDE

Flames failed to penetrate a metal deck insulated with perlite concrete in a 45-minute fire test. Final average temperatures are shown above. Write for complete test data.

U-VALUES FOR PERLITE CONCRETE (1:6 MIX) ON METAL DECK WITH ROOFING:

Thickness	2"	2½"	3"	4"
U-value	.222	.186	.160	.126

FOR TECHNICAL DATA *write for 43-page report: "Vapor Diffusion and Moisture Migration through Perlite Concrete," by Prof. C. E. Lund. $1.00 per copy. Sorry, cannot bill – please send cash or check with order.*

PERLITE INSTITUTE
10 E. 40th Street
New York 16, N.Y.

had exceeded his powers by "changing, revising and modifying" the commission's order. Changing the date for compliance, the city held, constituted the exercise of an administrative and not a judicial function.

The majority opinion, written by Associate Justice Kenneth Wayne, held that Judge Troland did not change, modify or revise the water commission's order. He had merely adopted the original order and given the city more time in which to comply.

The high court declared it logical to assume that the legislature intended that the court should have the power to act effectively and that it should not issue a useless, unworkable decree.

In a minority opinion, Justice P. B. O'Sullivan said the lower court exceeded its authority; that the law under which the commission ordered Norwich to build the plant had "real teeth" in it, and that the city should have appealed the case to the Superior Court for an enforcement of the order given Norwich before a default occurred.

Six-year smog study report—Stanford lays blame on ozone

After six years of research on the atmospheric phenomenon known to Los Angelinos as smog, the Stanford Research Institute, under the sponsorship of the Western Oil and Gas Assn. has released an extensive report concerning its causes and effects.

The 134-page report indicates that ozone is the principal factor responsible for the smog that blights the coastal city under certain weather conditions.

Studies show that the stagnant condition of the air over the large Los Angeles metropolitan area, with its many industrial and commercial activities, allows time for the ordinarily harmless chemicals emitted to remain in intimate contact and to react one with the other.

• **Sun is "motor element"**—The sun apparently drives the chemical reaction, producing an atmosphere with unusual chemical activity.

Strong and enduring sunlight is also a critical factor in the production of "parent" substances responsible for the formation of ozone and the resulting smog, the report states. Identification of these "parent" substances is now the object of intensive investigation.

• **Ozone is the principal oxidant**—Most of the chemical activity of the air is due to the presence of large amounts of ozone produced in the atmosphere. Ozone concentrations (30-40 parts per 100 million)—from five to ten times that in most areas of the world—have been recorded regularly in the Los Angeles area.

SRI indicates that the ozone concentration correlates with manifestations of smog such as reduced visibility, eye irritation and damage to vegetation. In fact, the institute has concluded that ozone concentrations are at present the best single measurement of smog intensity in the city basin.

• **Emissions to atmosphere**—According to SRI's estimates, around 3,100 tons of chemical materials are discharged into the Los Angeles atmosphere daily. It is estimated that the source of 1,180 tons of the total contribution is via automobile exhaust.

According to SRI, between 7 and 9% by weight of the gasoline fed to a gasoline engine is emitted in the exhaust as an organic pollutant.

Backyard incinerators contribute nearly 400 tons of organic materials per day, with gasoline production and service station operation emitting 224 and 52 tons of hydrocarbons, respectively.

• **Damage to crops**—In a special section devoted to damage to crops, the report states that no geographical pattern of injuries could be detected within the area of Los Angeles County.

Incidence of smog-injury was found to be equally severe over wide areas.

Using controlled fumigation in a greenhouse, plant pathologists working on the smog-research team were able to duplicate typical injuries. Plants were exposed to metered amounts of reaction products of ozone and unsaturated hydrocarbons in high concentration. They were allowed to react and were then diluted to more realistic concentrations. The resulting damage was similar to that observed in fields and gardens.

Ozone alone, in concentrations as low as 12 parts per 100 million, produced characteristic leaf damage, and in other experiments typical plant damage resulted when automobile ex-

(*Continued on page 60*)

HENDRIX dragline buckets insure...

profitable operation on every Job!

3 TYPES

TYPE "LS"
A lighter weight bucket designed for levee and drainage work.

TYPE "TS"
Engineered and classified as a general purpose bucket.

TYPE "HS"
A heavy duty bucket for moving shale or any hard formation.

⅜ to 40 Cubic Yards

A TYPE AND SIZE FOR EVERY DIGGING PURPOSE

Hendrix Buckets available without perforations on special order.

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

IT TAKES TWO

DISPLAY ADVERTISING

- AROUSES INTEREST
- CREATES PREFERENCE

DIRECT MAIL

- GETS PERSONAL ATTENTION
- TRIGGERS ACTION

After your prospect has been convinced by DISPLAY ADVERTISING, he still must take one giant step. *He must act.* A personalized mailing piece direct to his desk, in conjunction with a display campaign, is a powerful action getter.

McGraw-Hill has a Direct Mail Division ready to serve you with over 150 specialized lists in the industrial field.

To get your copy of our free INDUSTRIAL DIRECT MAIL CATALOGUE (1954) containing complete, detailed information about our services, fill in the coupon below and mail it to McGraw-Hill.

Do it now! The best advertising programs are planned well in advance.

Direct Mail Division,
McGraw-Hill Publishing Co., Inc.
330 West 42nd St., N. Y. 36, N. Y.

Please forward my free copy of the McGraw-Hill "Industrial Direct Mail Catalogue."

Name_____

Company_____

Address_____

City_____ State_____

haust and ozone were brought together from opposite ends of a sealed greenhouse and reacted in realistic concentrations such as readily occur in Los Angeles during a smog attack.

Fumigations with saturated or unsaturated hydrocarbons or with gasoline vapors alone, failed to produce characteristic damage, indicating the importance of the role of ozone in the smog conditions.

Copies of the full report are available to those professionally interested in the problem.

Central distribution area will handle all city's foods

A $90-million integrated center for the wholesale distribution of food in Greater Philadelphia, Pa., is scheduled for construction. Representing what is believed to be a new concept in marketing, it will serve as a collecting and dispersal point for foods of every description.

Geoffrey S. Smith, co-chairman of the Greater Philadelphia Movement, has announced plans for organization of a non-profit corporation that will develop the center.

The corporation will represent consumers, small grocers, food processors, large food chains, wholesalers, railroads, truckers, industry, banking and the medical profession.

Smith said that the project is the outgrowth of a research study sponsored by the GPM and conducted under the supervision of William C. Crowe, director of the marketing division of the U. S. Dept. of Agriculture.

D. of A. specialists in marketing, engineering and design participated in cooperation with a research group headed by Wayne A. Lee, professor of marketing at Pennsylvania State U.

Crowe estimates that the new center will reduce cost of food distribution by at least $6.5 million a year in the Greater Philadelphia District. "The idea of centralizing the wholesale food industry in one area is an innovation in the field of marketing foods in a metropolitan area," said Crowe.

Smith said that financing for the project is being arranged and that other committees having to do with design and construction of the food center are busy mapping plans.

The center will eliminate—among other existing receiving areas—the old Dock St. district often under criticism for its unsanitary conditions and traffic congestion.

Smith has indicated that financing is assured for the project.

City puts curbs on air conditioners in alarm over increased water waste

As a result of a report of water waste accompanying the increasing use of air conditioners, Kansas City, Mo., has adopted an ordinance prohibiting installation of water-wasting air conditioning systems.

City Manager L. P. Cookingham described the demand on the city water supply as "alarming." The report, submitted last month by engineer consultants Black & Veatch, showed that 1,000 tons of water-using air conditioning capacity had been added in Kansas City just this summer and that one-third of the equipment is of the type that wastes water. M. P. Hatcher, director of the city water department, declared that three gallons of water per minute are used for each rated ton of capacity in such conditioners.

"By this estimate," continued Hatcher, "the demand for water has grown 1,000 gallons a minute due to the 333 tons of water-wasting coolers recently installed. This amounts to 1.5 million gallons daily."

The ordinance adopted will not affect existing installations or new refrigeration-type air conditioners and systems that recirculate water.

• **Some alarming statistics**—According to the B&V report, the city would have to expand the capacity of its waterworks plant to 308 mgd by 1970. That would be an increase of 98 mg over the 210 mg capacity provided in an expansion program expected to be completed by 1956. Present capacity is 155 mgd.

Cookingham estimated that such an increase in water capacity would cost $50 to $60 million. He expressed the belief that further engineering studies would show that increased rates consistent with the cost of supplying water for air-conditioning would be sufficient to pay the cost.

If use of water for non-conserving systems is not restricted, it is estimated that water demand would reach 459 mgd by 1970, and the cost of meeting such a demand would cost at least $90 million for plant expansion, the city manager said.

Cost figures, according to Cooking-

(*Continued on page 63*)

Why the **MICHIGAN*** Tractor Shovel moves bigger yardage – *the Clark Torque Converter®*

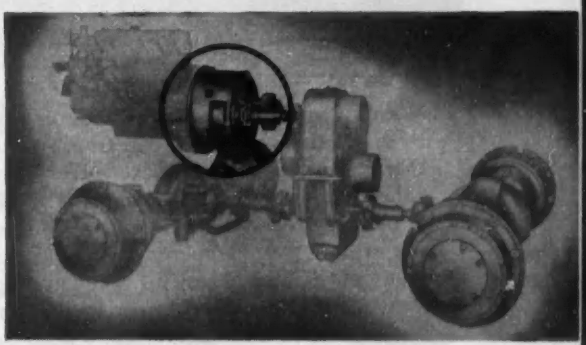
You can do miraculous things with a MICHIGAN* Tractor Shovel because of *extra power when it's needed*—a result of 3-to-1 torque multiplication in the CLARK Torque Converter.

● **Digging into TOUGH Material**—watch a MICHIGAN *force* its bucket into tough, compacted material: not a "shock" action—but a steady, resistless flow of *increasing power* that puts no punishing strain on the driving shafts and gears. Torque multiplication plus the terrific digging power of the hydraulic bucket rams enable the MICHIGAN to perform unbelievable feats.

● **Maintenance and Down-time reduced to a minimum**—the CLARK Torque Converter eliminates the engine clutch: the weakest link in a conventional power-train and the unit most frequently requiring repair.

● **Make ANY Shift at ANY Time**—with the Torque Converter, driving is as easy as handling your car! Shift into Forward or Reverse, into High or Low range *while moving in either direction* . . . the Torque Converter absorbs shocks.

● **Standard Equipment on All Models**—Clark is first to present a full line of Tractor Shovels with Torque Converter as standard equipment. See the MICHIGAN Tractor Shovel. Watch it in action, demonstrating its astonishing power, speed and maneuverability.



Talk to your MICHIGAN dealer; and send for the MICHIGAN Fact Folio, handy file of specifications and action photos—the coupon gets prompt action.

*A Trademark of Clark Equipment Company ® Clark manufactured under Schneider Licens

19

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
390 Second Street
Benton Harbor, Michigan

Please send the MICHIGAN Tractor Shovel FACT FOLIO

Name_____ Title_____

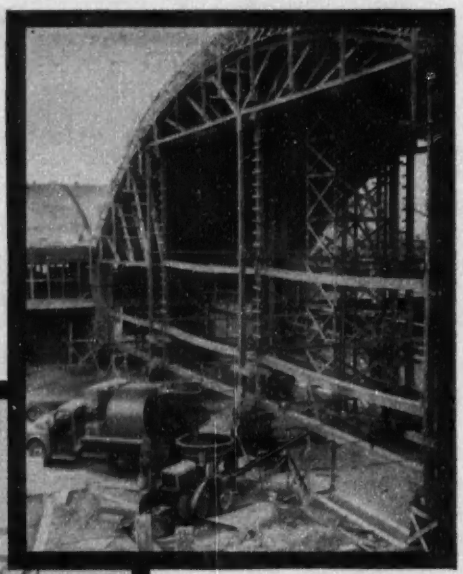
Firm_____

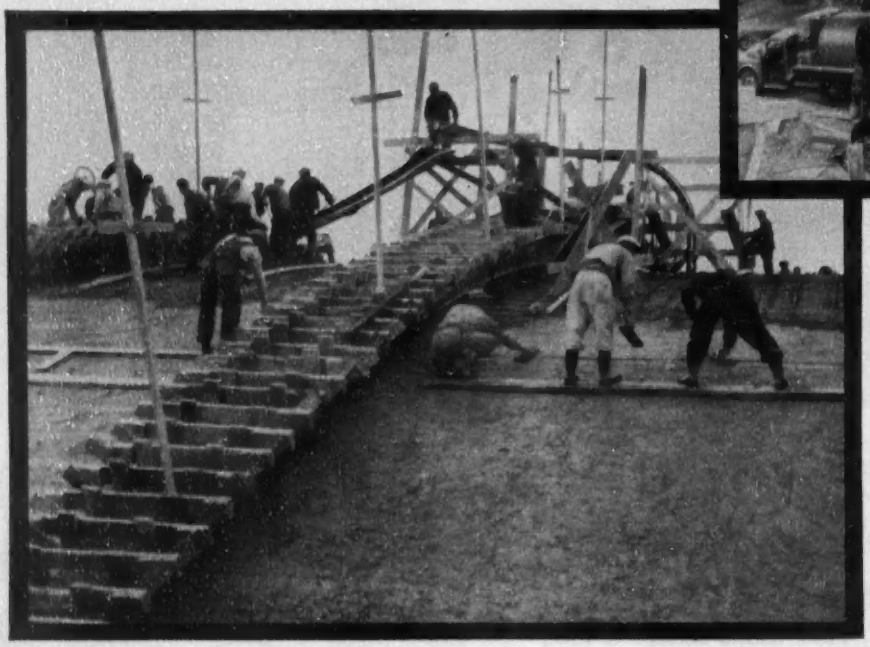
Address_____

City_____ County_____ State_____

"PUMPCRETE® Only Machine Able to Do Job"

says Sterling Construction Co., Ltd.





This Model 160 Rex Pumpcrete placed all the concrete for both hangars recently completed at the busy North Bay Airport in Ontario—a total of 30,000 cubic yards.

Piped through the roof, concrete was alternately supplied to pouring and finishing crews on each side. Each pour of about 225 cubic yards was completed in 15 minutes, change-over required less than a minute.

With all approaches to the building site barred by excavations and other construction work, only Pumpcrete was able to place successfully all the concrete for the two hangars recently completed at the busy North Bay Airport in Ontario. A single Model 160 Pumpcrete placed concrete for walls and cambered roof for both buildings, totalling 30,000 cubic yards of concrete with ¾-inch aggregate and mix rated at 4000 p.s.i.

Flexibility of Pumpcrete placement by pipeline enabled the contractor to make valuable savings in time on roof-pouring operations. Pumpcrete pipeline was run straight up to crown of roof. Pipe was then laid from crown to bottom on both sides of roof so that pour could be made by alternating from side to side. This equalized the load on forms and enabled the use of two pouring and finishing crews simultaneously.

On this job...on any job...these are the typical advantages of Pumpcrete that can make important savings for you. In the words of the foreman on this job, "I am convinced that this machine will pay for itself in savings."

Why not have your local Rex Distributor show you how simple it is to place concrete by pipeline on your next job. Chain Belt Company, 4633 West Greenfield Ave., Milwaukee 1, Wisconsin.

CHAIN BELT REX COMPANY

CONSTRUCTION MACHINERY

MOTO-MIXERS® MIXERS PUMPS PUMPCRETES® PAVERS

ham are based upon the estimated $600,000 per mgd additional capacity through expansion of existing facilities.

Under the new ordinance, all new air conditioning installations must be equipped with evaporative condensers, cooling towers or other water-conserving equipment. It provides that the equipment shall use no more than six gallons of water per hour per ton under full capacity.

Still pending in Kansas City is a proposed ordinance that would increase water rates for non-conserving refrigeration and air-conditioning units. It is believed that if adopted, this one will encourage conversion of existing wasting units to the conserving type.

Park outside city core area and take conveyor to midtown

From two Ohio cities come identical solutions to the midtown parking tangle. Both advocate the use of fringe area parking lots with passenger conveyor systems that would transport city-bound workers and shoppers from these outlying districts to centrally located terminals.

Don M. Casto, Sr., shopping center-office center developer was the first, insisting to Columbus, O., civic leaders that he has the right answer to the controversial question.

• **The plan**—First, halt all construction of downtown parking structures that serve only to channel more and more traffic into already congested areas.

Then, build four huge off-street parking facilities on the perimeter of the district—in slum or marginal areas where real estate values are low.

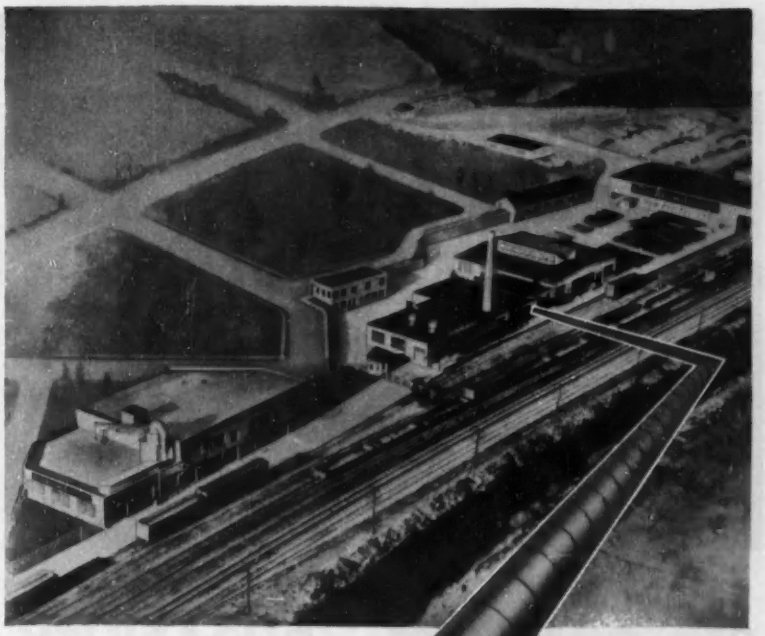
Next, construct underground trams on an endless conveyor belt (ENR June 3, p. 26) that would lead from the parking garages or lots to various corners of the State House lawn. The belt would be slowed sufficiently at the terminals to permit easy access and exit by riders.

Finally, outlaw parking on all midtown streets, thus speeding traffic. Existing off-street parking facilities would accommodate visitors who are unacquainted with the perimeter facilities.

Casto said that he had conducted extensive studies of the system and the cost of such a project would not be exorbitant. He said it could be financed by city revenue bonds, repaid from parking and tramway receipts.

• **Another plan, same idea**—A similar proposal for an underground conveyor

(Continued on page 64)



NEVER ENDING LINE OF

Quality

The Ric-wil Company represents over 40 years of manufacturing Quality Insulated piping systems. The complete Ric-wil product line is continuously pre-proven by laboratory and field tests to maintain this superior quality.

Contact your local Ric-wil representative or write direct for Catalog No. 5401

Send for Catalog 5401

Quality Piping Systems of the . . .
. . . Highest Thermal Efficiency

RIC-WIL PREFABRICATED INSULATED PIPING SYSTEMS

THE RIC-WIL COMPANY
BARBERTON, OHIO

VALDURA
TANK-WHITE
was specified for this job because...

National Petro Chemical Co.
Tuscola, Illinois

PERFORMANCE and DURABILITY
have been *double*-tested... in the laboratory... and on countless jobs.

This candid shot was snapped in Valdura's newly completed laboratory in Kankakee, Ill.

Names of important users of Valdura products will be gladly supplied upon request.

VALDURA TANK-WHITE
. . . and every other product in Valdura's complete line of heavy-duty industrial maintenance paints . . . is the product of thorough research in ultra-modern laboratories staffed by hundreds of the finest technicians in the industry.

Your added dividend, when you buy a Valdura product, is that it's

JOB TESTED!

Valdura's years of experience as the leader in the field of heavy-duty industrial maintenance paints, provide case record after case record to prove the efficiency and economy of its products.

If you'd like to know more about Valdura's complete line of specialized maintenance products, or if you'd like help with a particular problem, just state your wishes on your regular letterhead and mail to the address below. Your inquiry will be treated as an invitation to provide service . . . not as a license to exert selling pressure!

VALDURA — PAINTS THAT ENDURE

VALDURA HEAVY DUTY PAINT DIVISION
AMERICAN-MARIETTA CO.
101 E. Ontario St., Chicago 11, Ill.

MUNICIPAL

system for transporting shoppers to "core area" business locations in Cincinnati, O., were revealed by the Rapid Transportation Committee after its conference with C. A. Harrell, city manager.

Committee chairman Reid Hartman estimated that the equipment alone, exclusive of excavating necessary tunnel facilities, would cost more than $5 million. He suggested that the city build the belt transit system and lease it to Cincinnati Transit Co. for operation.

Business houses in the "core area" have been opposed to the city's plans for perimeter parking lots and garages.

The conveyor belt could be connected with speed walks from bus depots and lots outside the central area, and perhaps with similar connections at the shopping end.

Water board reports progress in clean-up of Ohio's rivers

In six years, at least 90 per cent of the urban population of Ohio should have adequate sewage and industrial waste treatment facilities according to Arthur Robinson, of the Ohio State Water Pollution Control Board.

However, the problem will not be ended then, because the urban population of the state is increasing at the rate of 100,000 per year, industries are expanding and new ones are being created. Facilities for sewage and waste treatment must be enlarged continually, he said.

• **Progress report**—The board has released this report of its 1954 progress in cleaning the streams of the state:

Fifteen Ohio towns and cities have finished work on new sewage treatment plants or completed improvements on old plants during the first half of this year.

Ten other communities will complete similar improvements during the remainder of the year, and 17 others have work under way that will not be finished this year.

The 15 communities that have carried out orders of the pollution control board include Bedford, Jackson, Marion, Logan, Miamisburg, Bluffton, Richwood, Westerville, Vandalia, Shreve, Hiram, Leroy, Lodi, Ironton and Wilmington.

The 10 expected to complete work this year are Cambridge, Findlay, Lima, Oak Hill, Shelby, Athens, Coshocton, Piketon, Lexington and Newcomerston.

Five of the state's largest cities are among the 17 now working on sewerage improvement.

K&M

"CENTURY" APAC

ASBESTOS-CEMENT SHEETS

Last Long, Look Good, Cost Little

No matter what your building plans, the chances are you can profitably use "Century" APAC sheets.

Being made from asbestos fiber and portland cement, APAC is fully resistant to fire and weather, rats and termites. Thus it serves equally well indoors or out—for walls, ceilings, liners, and partitions.

Although its smooth, attractive surface takes decorative colors well, it doesn't require paint for protection—ever!

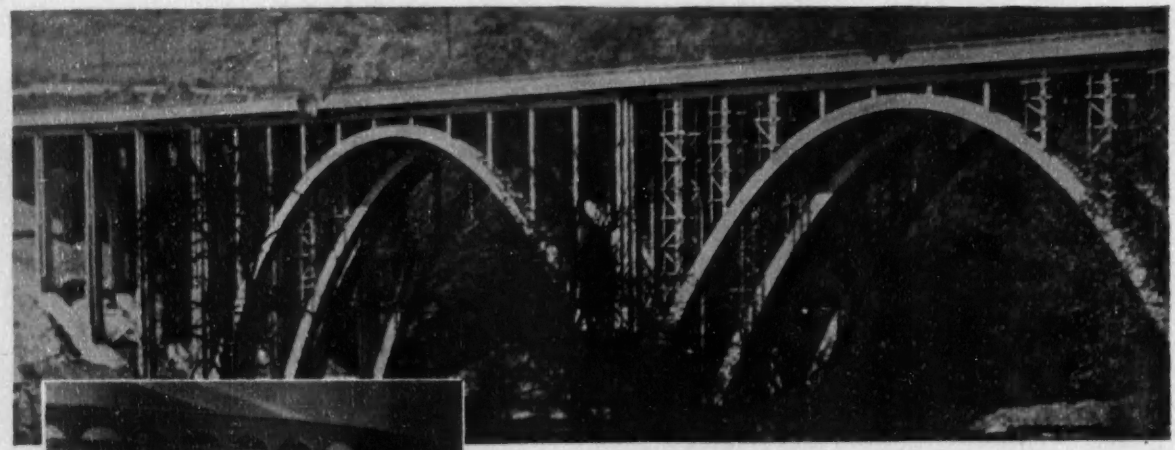
When it comes to cost, "Century" APAC is even more outstanding! It's made in 4′ x 8′ sheets that are easy to handle, easy to cut and drill, easy to apply with ordinary tools. This ease and speed of application does more than save you labor costs, too! APAC helps get new facilities into production faster; helps you to modernize existing structures without prolonged disruption of the work routine.

Your K&M distributor will gladly give you further details on versatile "Century" APAC sheets. Contact him soon, or write to us direct.

KEASBEY & MATTISON COMPANY • AMBLER • PENNSYLVANIA

Nature made asbestos . . . Keasbey & Mattison has made it serve mankind since 1873

K&M best in asbestos



Two Tramrail archbeam tracks, located between the sets of triple arches, run the entire length of this concrete bridge.

Traveling Platform *Facilitates* Bridge Inspection

Close-up inspection can be made quickly, safely and easily with this Cleveland Tramrail inspection unit.

The platform not only travels from end to end underneath the bridge, but it can be lowered between any pair of arches.

THE Penn-Lincoln Parkway Commercial Street Bridge, Pittsburgh, Pa., has been equipped with a Cleveland Tramrail system so that periodic inspection can be made to determine the condition of the bridge.

The system, which has two archbeam tracks running the entire length of the bridge, is provided with a hand-propelled traveling platform and hoist, making it possible to get close to all sections underneath, which otherwise would be difficult to reach.

Serious damage has been done to many bridges because of defects which have gone unnoticed. Cost of maintenance is reduced considerably if cracks in floor slabs and concrete pillars are discovered and repaired as they first begin to appear.

It is also important that close watch be kept of all-steel bridges and the Tramrail inspection equipment is not only a convenient, easy means of aiding this work, but is also a big help in making the repairs as well as for painting.

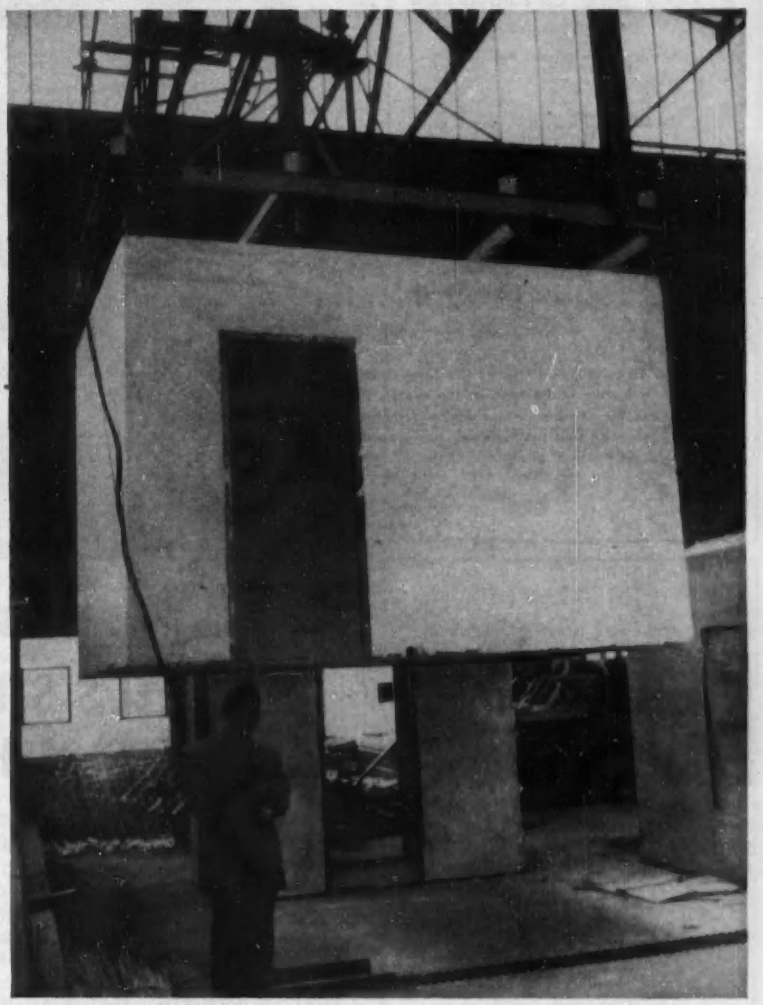
GET THIS BOOK!

BOOKLET No. B-2006. Packed with valuable information. Profusely illustrated. Write for free copy

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
3163 East 284 St. Wickliffe, Ohio.

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

STEEL FORMS, around inner mould, ready to receive plaster from bucket at top.



COMPLETED ROOM UNIT has doors and windows, if needed, already set.

Plaster precast in room-size units

Large and accessible gypsum deposits in Australia make plaster feasible as material for precasting roof and walls in one piece for prefabricated buildings. Cast at the factory, the load-bearing units are transported to the site and there juxtaposed to form complete internal framework for dwellings which are then finished in a variety of ways.

The cast plaster cells are made of two sizes only: each room has one dimension of 8 ft 9 in., but while the length of the larger is 12 ft 6 in., the width of the smaller is 5 ft. In spite of the limitation in size of units, the builders feel that with ingenious arrangement hospitals, hotels, guesthouses, schools, factory offices, service stations, and shops are among the buildings that can be designed without using more than the two standard cells.

Apart from its fire resistance and the thermal and acoustic insulation properties, the precast plaster rooms eliminate plastering, setting mouldings and the placing of door and window frames at the site.

The units may be placed on any standard foundation, and conduit and piping can be placed in the cavity between adjoining cells. Doors and windows are set in position before the plaster is poured. In the prototype model each room has a domed ceiling, in the center of which is an opening for ventilation and flush lighting.

In casting the plaster room, a concrete mould is set and around it is placed 6-in. mesh galvanized steel wire for reinforcing. Doors and windows are placed and steel formwork is clamped on. Plaster is poured, into the mould thus formed, through an aperture in the top of the mould.

When the plaster is set, the steel formwork is rolled back and the plaster unit hoisted off the inner concrete mould. A hot air generator drys off the cells in 24 hours. This last step is regarded as necessary because of the thickness of the plaster where the ceiling arches over from the walls—15 in. at its thickest.

Compression tests made by Australia's Commonwealth Scientific and Industrial Research Organization show the cells to be adequate in strength for supporting a normal tiled roof.

Aychar Pty. Ltd., Melboure, Victoria, Australia, are the makers of the plaster room units.

(*Int'l continued on page 68*)

Truscon Series 138 is the largest selling window of its type in the world. Especially popular in residential, light commercial and institutional, and apartment construction, with or without sill vent.

Truscon Series 138 Double-Hung Steel Windows with sill vent are used throughout Barney Convalescent Hospital, Dayton, Ohio. Lorenz and Williams, architects; Maxon Construction Co., contractor.

In Truscon Series 138 Windows...

STEEL'S STRUCTURAL STRENGTH KEEPS SASH SECTIONS SLIM

All-steel construction is the big reason why Truscon Series 138 Double-Hung Windows offer you so many advantages.

Steel is structurally strong. Stronger than other window materials. Steel sash members can be attractively slim, trim, graceful, free from bulk.

Steel is dimensionally stable. Steel windows can't shrink, warp, swell. Temperature and humidity conditions have virtually no effect upon them. They fit right, stay right, whatever the weather.

Steel is durable. It can't rot, resists damage. Steel windows can be expected to serve for the life of a building.

Steel is easy to fabricate. This means mass production economies and standards.

In Truscon Series 138 Double-Hung Windows you get all these advantages. And more. Factory-installed stainless steel weatherstripping. Stainless steel motor tape balances. Electro-galvanized, Bonderized surfaces with baked enamel coat. Wide choice of sizes and styles, including sill vents, picture window units. Finest hardware. Public confidence and acceptance.

You want to look *through* windows, not *at* them. You want Truscon Series 138 Steel Windows, with slim sash section. More facts, details, and specifications in Sweet's; or write Truscon.

TRUSCON®

TRUSCON
MARK OF MERIT PRODUCTS

TRUSCON STEEL DIVISION
REPUBLIC STEEL

REPUBLIC STEEL

1064 ALBERT STREET • YOUNGSTOWN 1, OHIO
EXPORT DEPT.: CHRYSLER BLDG., NEW YORK 17, N.Y.

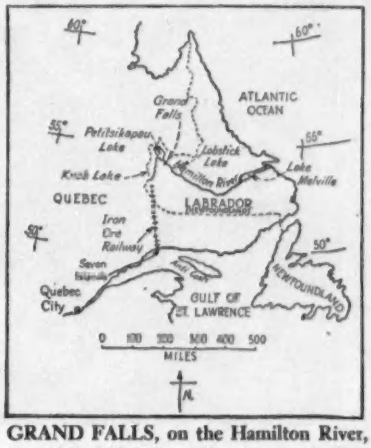
A NAME YOU CAN BUILD ON

Record hydro project plotted in Labrador's rich ore fields

Development of the vast water power available at Grand Falls on the Hamilton River in Labrador is being explored actively on behalf of the Rothschild banking and financial interests of Great Britain.

The survey is particularly timely in light of the recently started ore shipments from Labrador's rich iron ore fields, transforming the undeveloped forest-and-lake country into an area that has become one of the world's richest ore-producing areas (ENR, September 11, 1952, p. 38).

Grand Falls is roughly at the eastern apex of a triangle whose western side, 100 to 150 miles away, runs through both the ore bodies now being worked. The Hamilton River Basin drains into the Atlantic Ocean, rather than southward into the Gulf of St. Lawrence.



GRAND FALLS, on the Hamilton River, is within 150 miles of major ore bodies.

Announcement of the hydro survey was made in London, England, by a Rothschild spokesman. It is understood that the $1-million survey is being conducted by a Montreal engineering company. Investigations are sponsored by the British Newfoundland Corp. of St. John's, Newfoundland. BNC, formed one and a half years ago to carry out development work in the island province and Labrador, is backed by the British chain of banks, N. M. Rothschild & Sons. The corporation has a concession for the power development at Grand Falls and holds mineral and timber rights in Labrador.

Known as one of the scenic wonders of North America, Grand Falls is located in a completely isolated region 550 mi northeast of Quebec City. Drop in the falls is about 250 ft. Estimates of the power available vary from 2,000,000 to 4,500,000 kw. All reports suggest that the resulting power project will be the largest single power installation to be built in the world.

Gen. A. G. L. McNaughton, Canadian chairman of the International Joint Commission, has expressed great interests in the project which he said would be "per horsepower, the cheapest in Canada to develop and one of the cheapest in the world." He explained that the gorge of the Hamilton River, at the falls, forms a natural power site which would require relatively little engineering work for power generation.

The importance of the Grand Falls power scheme in Canada is emphasized by the fact that a built-up province like Ontario has now developed all its major water power sites and is building steam plants to supplement hydroelectric supplies. Wherever hydro power can be had cheaply in Canada, whose coal and, until recently, oil supplies, were small, its development is highly important.

Peru picks French firms to complete two projects

Peru has given French financial and industrial interests the job of completing the Chimbote steelworks and the Canon del Pato hydro-electric plant in the Santa River Valley north of Lima. The contract calls for both projects to be finished within two years at an estimated cost of $15 million.

Construction of the steel plant will be carried out by Les Etablissements DeLattre & Frouard Reunis and other French industrial firms. La Societe Generale d'Exploitations Industrielles will complete the hydro-electric plant. Both firms will work in conjunction with the Consortium of Engineers & General Contractors.

Funds for financing the work will come from a loan provided by the Banque de Paris and des Pays Bays. During the past 10 years Peru—under its Corporacion Peruana del Santa—has invested approximately $20 million in the two projects. But with most of its own revenues now earmarked for plant equipment, the government corporation found it impossible to undertake total completion.

(*Int'l continued on page 70*)

CONSTRUCTION ESTIMATES and COSTS

Second Edition!

A practical book that shows you how to estimate construction costs quickly and accurately. Gives step-by-step instructions for estimating construction work of all kinds, including excavations, all parts of buildings, concrete, structural steel, and material transportation, profit, overhead, etc. Includes many illustrative, worked-out estimates of typical jobs. **By Harry E. Pulver, Prof. of Civil and Structural Engineering, Univ. of Wisconsin. Second Edition. 653 pp., 267 illus., and tables, $8.00**

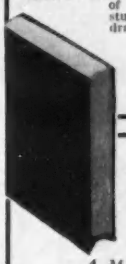
SIMPLIFIED ROOF FRAMING

Second Edition!

Clear, concise manual covers common types of roofs and how to lay out all types of rafters required in them. Gives clear-cut principles that enable professional carpenters and laymen to do roof work without the use of mechanical drawing, geometry, and trigonometry. Gives short cut methods of working made possible by the steel square—explains its use, describes rafter tables that appear on squares, and shows how to use the square in stair work. **By J. Douglas Wilson, Super., Trade and Ind. Ed., Los Angeles City Schools, and S. O. Werner, Assoc. Prof. of Ind. Ed., Univ. of Calif. 2nd Ed. 160 pp., 153 illus., $3.25**

BLUEPRINT READING for the BUILDING TRADES

Gives intensive training in reading building blueprints quickly, thoroughly. Covers the building trades as a whole and is organized for self-instruction. From the beginning discussion of importance of blueprints to the examination and study of a complete set of working drawings, this book helps you get the most information out of blueprints in the shortest possible time. **By Joseph E. Kenney, Architect, 100 pp., 39 illus., $4.00**



THE BUSINESS OF HOME BUILDING

A Manual For Contractors

Explains business methods that make home building more profitable. Gives you "know-how" needed to make a profit with minimum risk to your money . . . a practical **understanding** of economic factors that determine the market for your product . . . the benefit of production knowledge based on the experience of other builders. **By Kenneth B. Johnstone, Carnegie Institute of Technology, and Charles Joern, Wm. Joern and Sons. 289 pp., 7 illus., $5.50**

SEE THESE BOOKS 10 DAYS FREE

McGraw-Hill Book Co., Dept. NR 8-19
330 W. 42 St., NYC 36

Send me book(s) checked below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep, plus few cents for delivery, and return unwanted book(s) postpaid. (We pay for delivery if you remit with this coupon—same return privilege.)

☐ Pulver—**Construction Estimates and Costs**—$8.00
☐ Wilson & Werner—**Simplified Roof Framing**—$3.25
☐ Kenney—**Blueprint Reading For the Building Trades**—$4.00
☐ Johnstone & Joern—**Business of Home Building**—$5.50

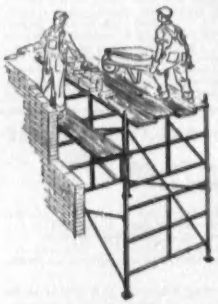
(Print)
Name .....
Address .....
City .....Zone....State.....
Company .....
Position .....
This offer applies in U. S. only NR-8-19

Watch Every Buck— . . . *Carefully!*

Actually it's not how many bucks you shell out on original costs that count—it's *how much do you save* in erection time and in on-the-job performance. Here are the kind of *savings that count:* can you scaffold higher with fewer panels and parts? can you position plank-bearing brackets at intermediate levels? can you place material at hip-level where your mason can work easier and faster? There's one answer . . . you *can* with Universal Ezebilt Mason Panels, and we don't just make the claim—we show you how. You'll have a time-saver, a buck-saver and a life-saver with **UNIVERSAL Ezebilt SCAFFOLDING**

SU PANELS

Provide open bay for easy handling of planks and four plank bearing levels.



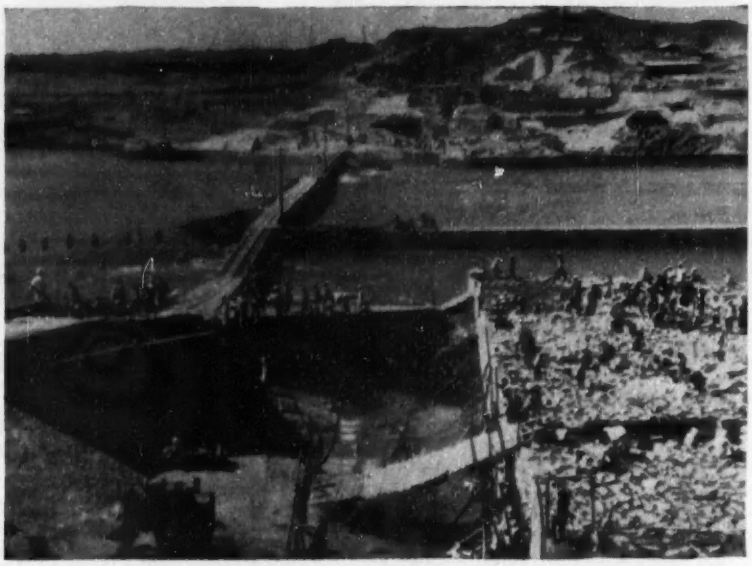
SUX PANELS

Provide three plank bearing and bracket rest levels.

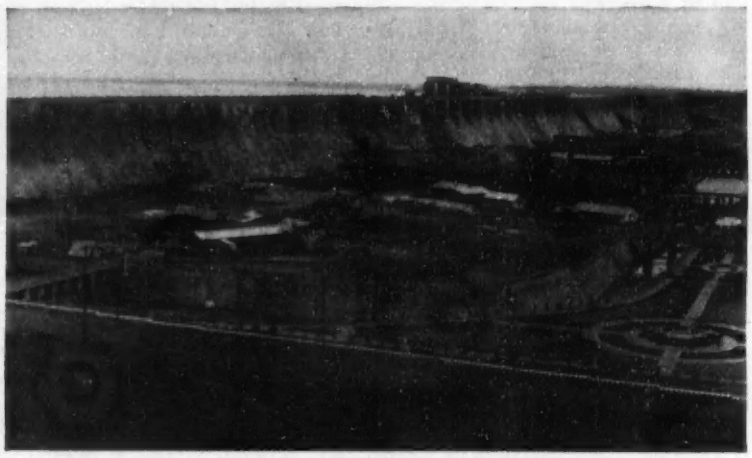
Write for New Informative Catalog

Distributors offer planning help and fast deliveries from Sales and Rental Stocks . . . See your phone directory

UNIVERSAL MANUFACTURING CORP.
ZELIENOPLE 3, PA.



India's Tungabhadra Dam site, 1951 . . .



Today: over a mile long, 160-ft high

Finished this year is one of the most unusual structures in modern dam work: India's 6,000-ft long, 160-ft high Tungabhadra Dam in the valley of the Kistna River in central India.

What makes the work so unusual is that the gigantic mass of the dam was almost totally placed by hand (ENR June 7, p. 37).

A combination irrigation and hydro project, Tungahadra contains 52,000,000 cu ft of hand-placed masonry; over half is granite and the balance is mortar. The dam stores 2.6 million acre-ft of water and has a spillway discharge capacity of 650,000 cfs, twice the maximum recorded flood. Almost 1,000,000 acres will be irrigated. The ultimate capacity of the powerhouse will be 110,000 kw.

Labor force on Tungabhadra was 10,000. This multitude was needed to place the 9-ft thick faces of course-dressed stone masonry on the upstream and downstream sides of the dam.

Random rubble in lime mortar was placed by hand in the heart of the dam.

Granite rock for the masonry was quarried on an island a mile below the dam and in the hills about 4 miles away. It was moved to the dam by rail and trucks which, with rock drills and mortar mixers, constituted almost the only machinery on the job.

(*Int'l continued on page 72*)

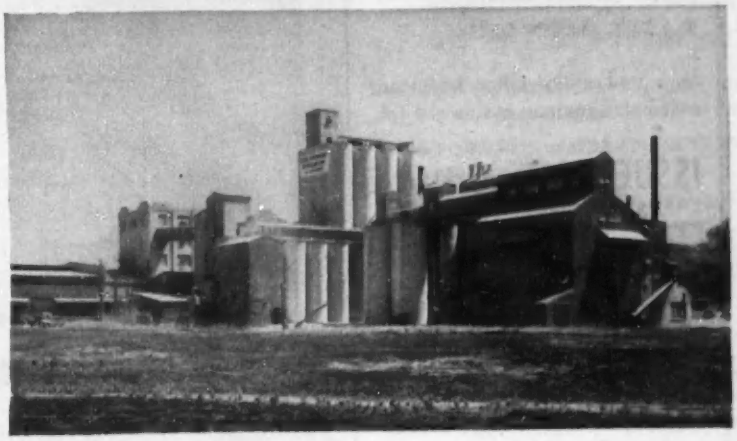
You're looking at *two* warehouse fires!

When that pall of black smoke rolling across an eastern city finally cleared, a 10-story warehouse had been completely gutted. The flames, leaping across the street, also damaged another building.

The other fire, in a warehouse of the Rice Growers Association of California, was less dramatic but no less *real*. When fire struck here, a Grinnell Automatic Sprinkler System, installed by an alert management, quickly checked the flames.

No matter how *alert* management may be, it cannot prevent fires from *starting*. That's why you find so many commercial and institutional buildings, department stores, hotels, hospitals — as well as warehouses and manufacturing plants — equipped with Grinnell Sprinkler Systems.

Grinnell Sprinklers stop fire at its source, wherever and whenever it strikes, night or day, with automatic certainty. 76 years experience proves this. Now, with the new Grinnell Automatic *Spray* Sprinklers, you get even greater protection against fire. *Less water puts out more fire.*



The time to act on Grinnell Protection is now . . . before fire burns you out, or cripples your business. Remember, a Grinnell Sprinkler System often pays for itself in a few years through reductions in insurance premiums. So, if you have fire insurance, you're probably paying for Grinnell Fire Protection anyway . . . *why not have it?* For complete details, mail coupon.

GRINNELL
PROTECTION AGAINST EVERY FIRE HAZARD

Manufacturing, Engineering and Installation of Automatic Sprinklers Since 1878

GRINNELL COMPANY, INC.
258 West Exchange Street, Providence, Rhode Island

Please send me your new illustrated booklet, "Grinnell Automatic *Spray* Sprinklers".

NAME .....
TITLE .....
COMPANY .....
STREET .....
CITY ..... ZONE ..... STATE .....

Announcing . . .

ENGINEERING NEWS-RECORD'S 1954 CONSTRUCTION COSTS YEARBOOK

Giving you once again—complete and accurate data on cost movements in the construction industry.

Featuring:

- **Cost trends and outlook**
- **Construction cost indexes**
- **Building cost indexes**
- **Highway costs**
- **Unit prices on schools**
- **Unit prices on hospitals**
- **Equipment price charts**
- **Prestressed concrete prices**
- **Financing costs**
- **Wage and insurance costs**
- **Wall and roof costs**
- **Atomic shielding costs**

. . . and many other important cost helps you can use on the job.

ISSUE DATE: Oct. 7th.

Order extra copies now to be sure of getting enough for your organization. Price $2 each. (Last year your orders exhausted the stock.)

Advertising Forms Close Sept. 16th.

ENGINEERING NEWS-RECORD

330 W. 42nd St. N. Y. 36, N. Y.

A McGraw-Hill Publication

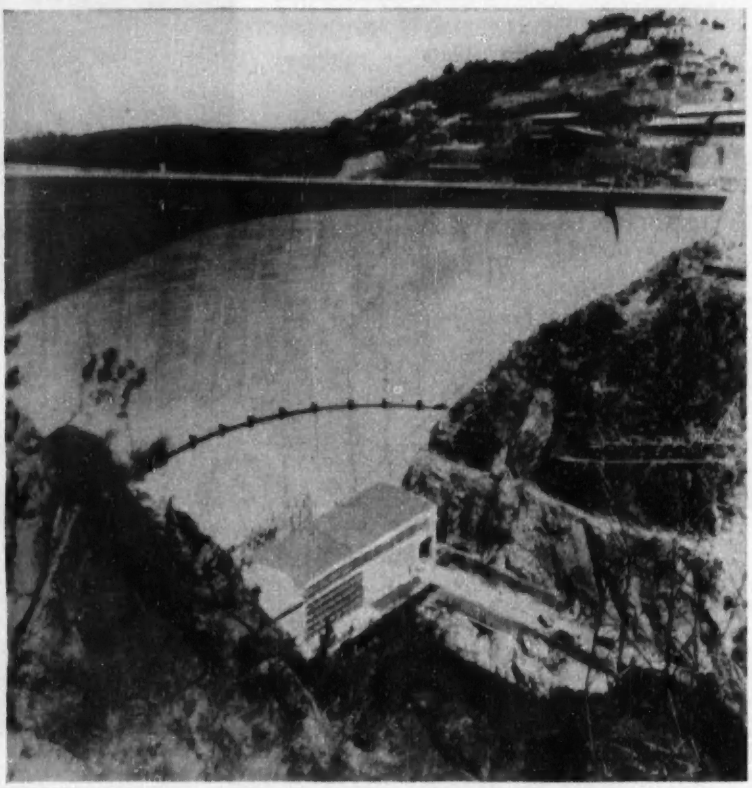
International briefs . . .

• **Subway plans set aside**—Bogota now is thinking of building an elevated railway instead of a subway to transport passengers from outlying suburbs. U. S., English, French and Italian firms—reportedly have offered to do the job—but the French offer is said to be the most favorable. Bogota officials are now in Europe negotiating with French banking and engineering firms for financial backing.

• **Egyptian oil enterprise**—Four U.S. independent oil companies and a Cairo industrialist are preparing to spend $30 to $40 million to drill test wells in an 80,000 square mile area of the untapped western Egyptian desert. The combine (called Egyptian Oil Exploration Co.) already has obtained a 30-year concession from the Egyptian government. Participating in the venture: Cities Service, Continental Oil, Richfield Oil and Ohio Petroleum companies—plus Ahmed Abboud, industrial and shipping magnate.

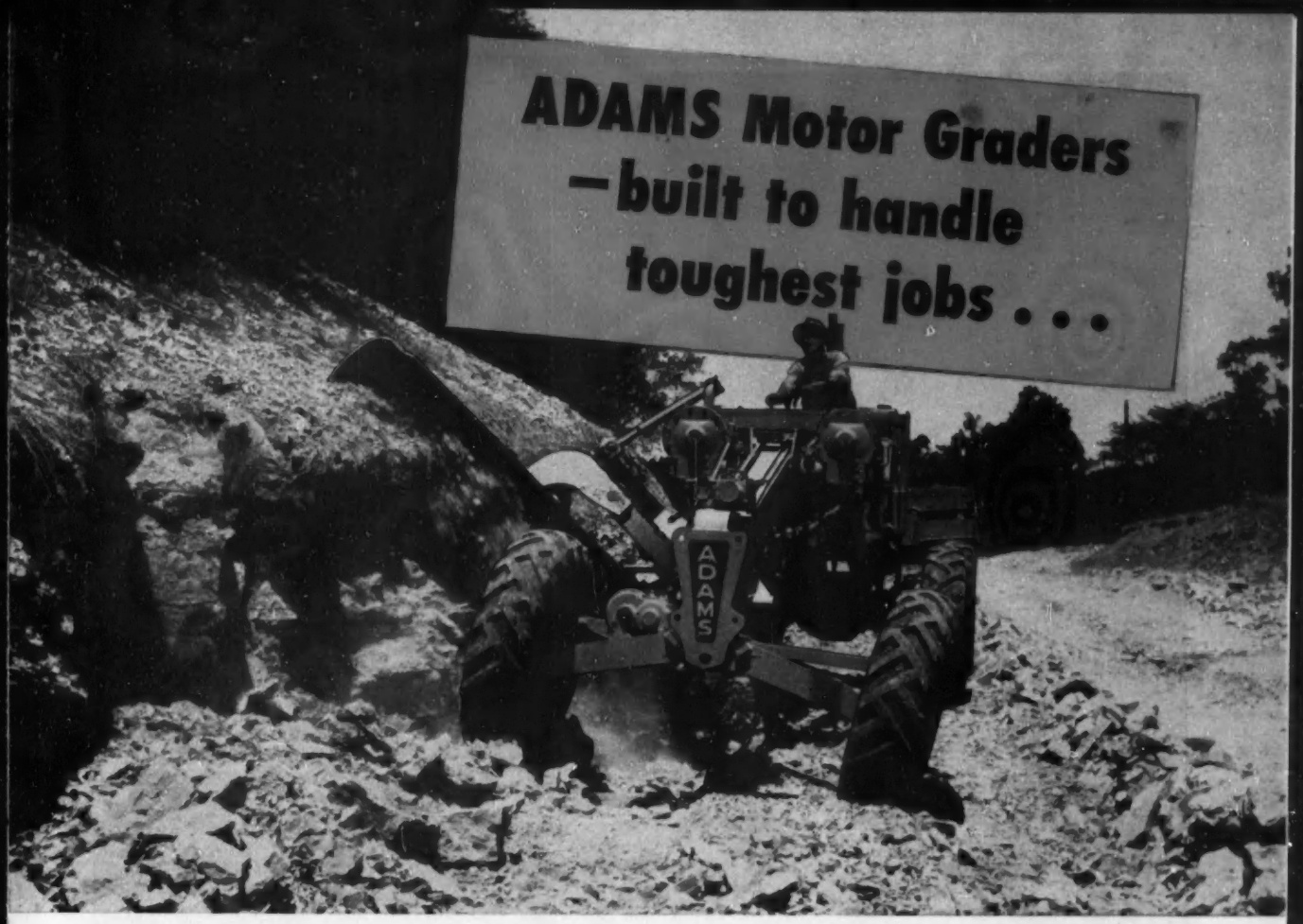
• **Iraq invites bids**—Iraq has asked for bids in connection with a new project to supply about 500,000 gallons of water per day to Hashimiya, Madhatiya and Kassim. The project involves supply, erection, construction and complete installation of all related works, including pumping plant, mains, tanks.

• **Chilean concrete plants**—The Corporacion Nacional de Inversiones de Prevision—a Chilean government dependency—reportedly is planning to build sand and gravel and ready-mix concrete plants. U.S. firms are being invited to bid on equipment and installation.



Portugal opens a major hydro dam, 433 ft high

Just dedicated on the Zezere River in Portugal, the Cabril Dam is the second extensive power project to be put on line in the development of that river. The Castelo do Bode Dam, 44 miles downstream from Cabril, was finished back in 1951, and generates 150,000 kw. The Cabril Dam will provide a capacity of some 100,000 kw and will serve as a flow regulator for the Castelo do Bode Dam downstream. Backing up a reservoir 33 miles long, Cabril Dam has a storage capacity of 567,000 acre-ft. Spillway consists of two tunnels capable of discharging 140,000 cfs together. Builder-owner is Hidro-Electrica do Zezere.



Jobs for motor graders don't come much tougher than the heavy bank-cutting operation shown above. Working in rugged, rocky country like this demands unusual power, strength and stamina—the kind that Adams Motor Graders are world-famous for.

The ability to stand up under punishing work is only one of the many advantages you will find in Adams Motor Graders. They also give you a combination of time- and money-saving features not to be found in any other machines. (See listing at right.)

Before you buy any motor grader, let your local Adams dealer show and demonstrate what these advantages can mean to you in the way of higher production and lower costs.

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, INDIANA

Only ADAMS Offers All These Features:

- **NEW CONSTANT-MESH TRANSMISSION**—quick, easy, positive gear shifts.
- **8 FORWARD SPEEDS**—up to 26 mph. for fast transport.
- **4 REVERSE SPEEDS**—up to 13 mph. Save time on shuttle work.
- **3 CREEPER SPEEDS**—low as ¼ mph. (Optional).
- **RUBBER-MOUNTED ENGINE**—floating power—no vibration transmitted to grader.
- **DUAL BRAKING SYSTEM**—quicker, easier, safer stops, with less effort.
- **FOOT ACCELERATOR**—for easier, safer overland travel.

ADAMS

Motor Graders TraveLoaders Pull-Type Graders

Gas-Turbine-Powered Pump on Test at Navy Fire Fighting School

Where Hyatts turn at 40,000 rpm!

Old in theory, gas turbines are comparatively new as a practical power source. So it was big news in engine development when Solar Aircraft Company, of California, announced the world's first portable, hand-started gas turbine power plant.

Developing 50 horsepower, the new lightweight operates at the high speed of 40,000 rpm—or twenty times the speed of most automobile engines! And that's where *we* come in.

To be sure of complete bearing dependability for such high-speed operation, Solar turned to Hyatt . . . and there's a Hyatt Hy-Load Roller Bearing at the most critical position on the turbine shaft.

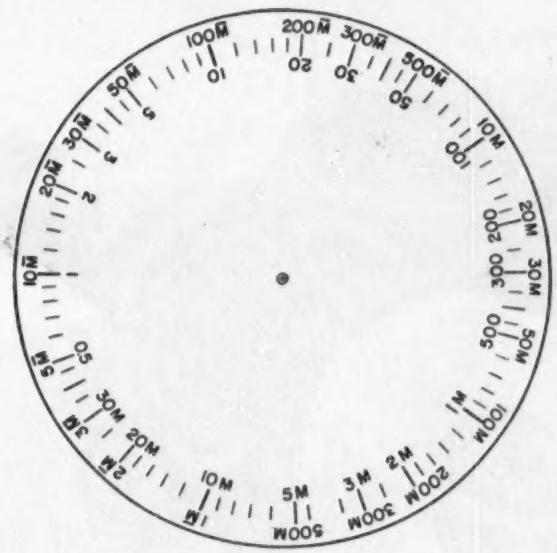
Whether you're building locomotives or lawn mowers, and whether shafts turn at 4 or 40,000 rpm, you'll get better bearing performance from *Hyatts!*

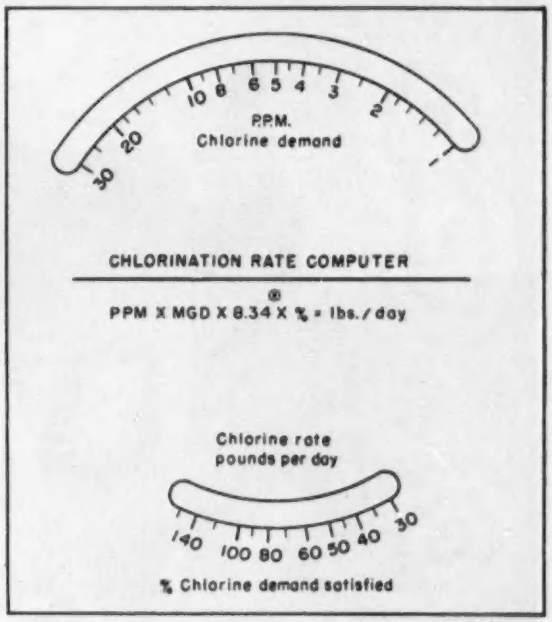
HYATT

ROLLER BEARINGS

STRAIGHT BARREL TAPER

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY





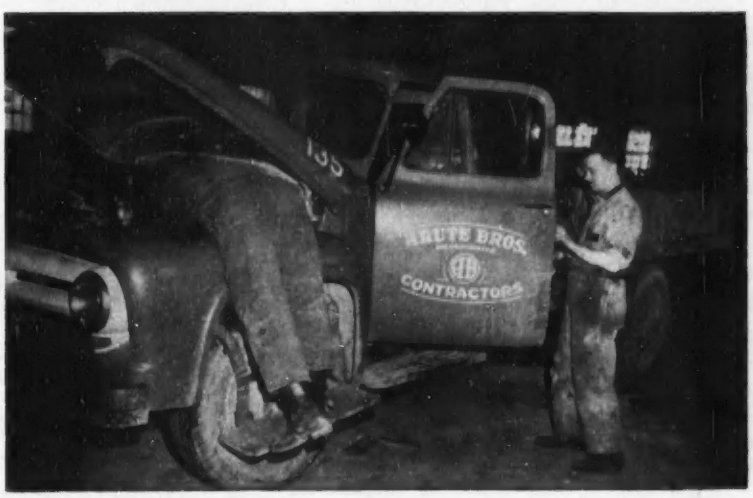
Chlorine rate computer: handy pocket tool

A computer can be made by putting the two pieces above on a pin, right over left. It can be used for almost any chlorination application, including water and sewage treatment applications. It covers flows from 5,000 to 1,000,000,000 gal per day, chlorine demands from 1 to 30 ppm, dosage rates from 0.3 to 50,000 lb per day, and percent of demand satisfied from 30 to 160%.

In operation, the flow is set to the chlorine demand on the upper scale, and the chlorine dosage is read on the lower scale at the percentage of demand it is desired to satisfy.

Example: A sewage effluent has a 15-minute chlorine demand of 10 ppm. The flow rate is 120,000 gal. per day. From experience the operator knows that the receiving body of water can be kept in a satisfactory condition if 60% of the chlorine demand is satisfied. The 120M mark is set opposite the 10 mark on the upper scale, and the dosage is read opposite the 60% mark on the lower scale (6.3 lb. of chlorine per day.).

If there is sufficient interest shown in this computer, it will be made available commercially through either a chlorinator company or a slide rule manufacturer. Inquiries should be addressed to H. M. Hays, 12000 Vista Del Mar, Venice, Calif.



Small platform can be a big help

A strap-mounted platform hung over the front wheel of a truck enables mechanics for Arute Bros. of New Britain, Conn. to get at the engine for maintenance and repairs. The idea, a product of the imagination of F. D. Jorsey, equipment superintendent for the contracting firm, consists of two pieces of strap in the form of inverted J's and suitable cross bracing. Platform can be made to fit any sized tire.

Pyramids control erosion, cost less than riprap

The Puget Sound Power & Light Co. of Seattle has found pre-cast concrete pyramids to provide the most economical protection for a waterway near its White River hydro plant.

Rock riprap, which ordinarily would have been used, would have required a 30-mi round trip by trucks and an access road would have required improvement. The pyramids were cast at the power plant with concrete delivered at local prices from a nearby town.

(*Continued on page 78*)

7 important Dumptor advantages

Take another look at the latest model Koehring 6-yard Dumptor shown here. It has some important features worth checking. Notice how heavy snubber-spring on steering axle cushions road shocks — yet retains Dumptor's unique advantage of no spring maintenance. There are no leaf springs. Big shock-absorbing drive tires eliminate need for springs on the drive axle.

Alignment of drive wheels with steering wheels adds to efficiency of Dumptor no-turn shuttle hauling — makes a big difference in traction and flotation when Dumptor is shuttling back and forth across loose stockpiles, soft ground.

Another basic Dumptor advantage is instant gravity dump. It's controlled by a simple body latch and new dump lever arrangement. Gravity dumping eliminates slow-acting, troublesome body hoists — never balks, never wears out. Notice, too, the new streamlined, all-steel body. Even with all this heavy-duty strength, Dumptor still has more than 6 h.p. for every ton of loaded weight. It accelerates fast, pulls through soft ground and up grades with less shifting — climbs 24% grades fully loaded.

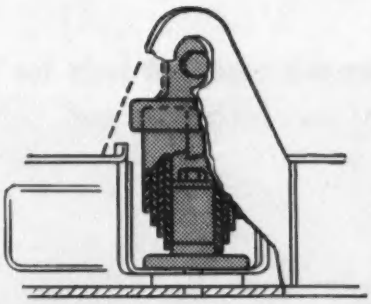
Let your Koehring Distributor give you all the latest Dumptor® facts. See him soon, or write.

KOEHRING COMPANY

MILWAUKEE 16, WISCONSIN

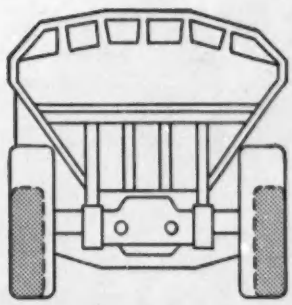
Subsidiaries: PARSONS · KWIK-MIX · JOHNSON

K437



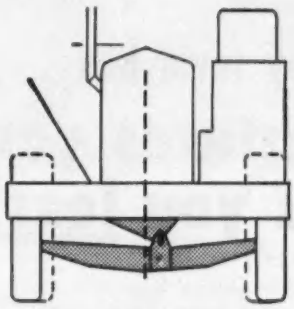
Smooth ride

Heavy, snubber-type spring is mounted between Dumptor main frame and the steering axle. Shock-absorbing action provides plenty of "cushion" — takes all the jolts out of rough, off-road travel. Easy on operator and machine.



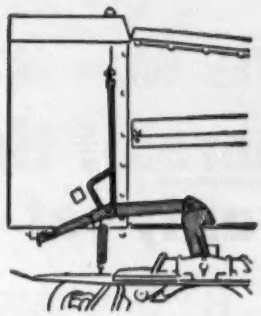
Tires track in direct line

Wider, heavier steering axle puts Dumptor steering wheels in direct line with big drive wheels. Tires track in the same path. There's less rolling resistance, better traction in soft ground, and on rough haul roads.



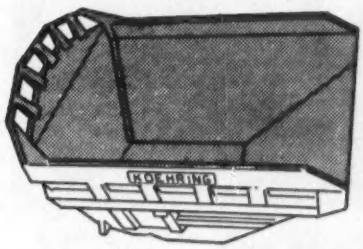
Off-set pivot on axle

Pivot point on steering axle is off-set from center line 3¼" toward operator side of machine. There's no sag, even with unbalanced load. Steering axle oscillates up to 21" — keeps twisting strains out of Dumptor main frame.



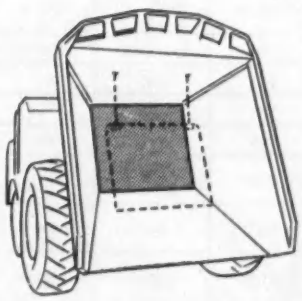
New body-latch, dump lever

Body latch for 1-second gravity dumping is simple, trouble-free. Latch is engaged by a single hook, mounted on the chassis frame. Dump lever is located inside the cab, in an easy-reach position to left of operator.



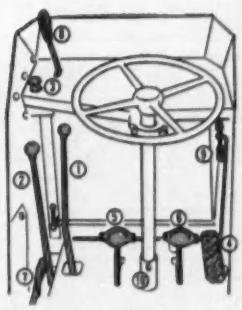
Streamlined, all-steel body

Inside is free of bulges or ledges. Top edge is box-beam constructed. Sides, ends are ribbed with 5 and 8" channels. Double-plate bottom is lined with multiple steel beams. Note ridge bar added to sturdy rock-guard teeth.



Bolted or free-swinging pan

Heavy steel kick-out pan is ½" thick. Pan can be bolted to body floor for extra protection when loading rock. Remove bolts, and pan has free swinging kick-out action — breaks suction when dumping wet or sticky materials.



Easy-reach controls:

(1) Speed gear shift lever, (2) directional gear shift lever, (3) starting aid, (4) foot throttle, (5) clutch pedal, (6) brake pedal, (7) parking brake, (8) body-release lever, (9) hand throttle, (10) running lights control switch.

Here are important facts for the "man behind the gun"

This White 18" Dumpy level has...

more of the features you want, yet costs you less!

BEFORE you buy, compare this White Dumpy level with a similar model of any other recognized make. From every standpoint — design detail . . . quality construction . . . work-speeding, life-lengthening features and cost — you'll quickly see why a White's the best buy you can make. It will make your work faster, easier, more accurate. Check this comparison chart:

FEATURES	D. White No. 7080	Instrument A	Instrument B
Magnifying power of telescope	35X	30X	27X
Distance away you can read 1/100 ft. graduation	1200 ft.	1050 ft.	900 ft.
Diameter of objective lens	1.81 in.	1.485 in.	1.69 in.
Field of view (in minutes of arc)	64′	52′	60′
Coated optics	YES	YES	YES
Covered leveling screws	YES	YES	YES
Can you easily replace worn leveling screws in the field?	YES	NO	YES
Sensitivity of level vial (in seconds of arc per 2mm of graduation)	20"	20"	25"
Price — complete with carrying case, tripod and accessories — F.O.B. factory	$295.00*	higher	higher

Price subject to change without notice.

For complete details on the 18-in. Dumpy level and other equally fine engineering instruments, see your David White dealer, or write direct to DAVID WHITE CO., 315 W. Court Street, Milwaukee 12, Wisconsin.

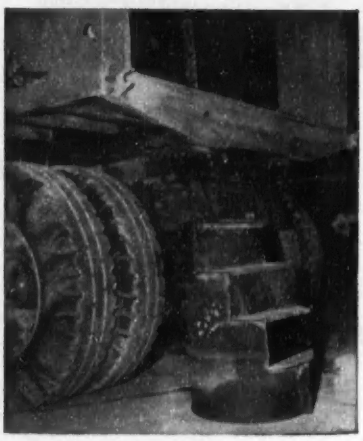
DAVID WHITE COMPANY

We offer complete, expert repair service on all makes, all types of instruments

Each pyramid weighs about 3,000 lb, measures 4½ x 4½ ft at the base and is 4 ft high. Double steel eyes were cast in the top and base for ease of handling.

Thirty pyramids were lowered over an eroding bank to the edge of a swirling stream at a point where a timber-lined canal empties into an earth canal. During low water, rock-fill will be bulldozed from a river bar 100 ft downstream will be bulldozed behind the pyramids to further line the bank. Cost of the pyramids is estimated at about half the cost of riprap.

(F20 *continued on page 82*)



Going up? Roll out the barrel

An old fuel drum and scrap, a cutting torch and a couple of electrodes can be worked into a pretty serviceable step-ladder for working around big equipment. The bottom part of the barrel can also be filled with water for added stability. The barrel-ladder is the idea of Ira Davison, equipment sup't for the Savin Const. Co., West Hartford, Conn.

roadways made easy

PHOTO COURTESY HETHERINGTON AND BERNER INC., INDIANAPOLIS, INDIANA

Chrysler *Power helps keep America rolling . . . at less cost*

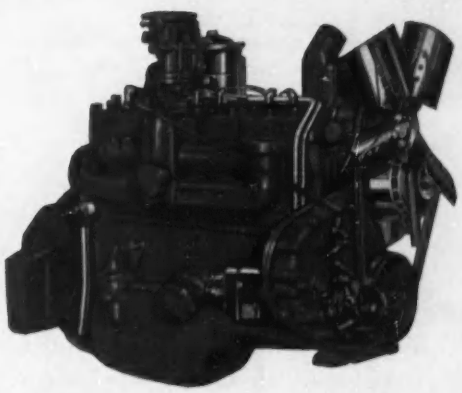
This mobile mixer-paver replaces costly man-hours with economical horsepower. In one continuous operation the unit takes in sand, gravel, stone or other road surfacing materials, mixes them in with a binder ingredient—all in predetermined proportions—and spreads the mixture onto the roadbed, to whatever depth best meets grade and crown requirements. Materials to be mixed may be fed to the unit from trucks, as in this case, or picked up from windrows with a loader attachment. The entire operation requires the services of three, possibly four, men.

The Hetherington and Berner Moto-Paver turns out up to 120 tons of mix per hour for resurfacing jobs. Paving width is adjustable from 8½ to 12 feet, depths to 7 inches. Paving speeds start at two feet per minute. Road speeds up to twenty-five miles per hour enable the equipment to carry itself from one job to another.

Two Chrysler Industrial Engines power this equipment. Travel components are driven by our Model 8 Engine whose 250 cubic inch displacement, together with Chrysler gyrol Fluid Coupling, provides power with flexibility of operation. A Model 14, powerful 331 cubic inch displacement engine, drives mixer, conveyor, spreader and pumps.

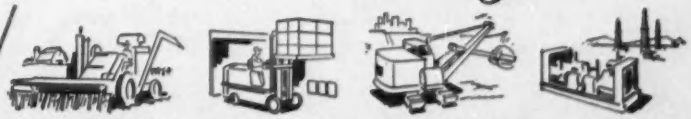
If your equipment requires power within our 230 to 413 cubic inch displacement range, engines that will operate equally well on gasoline, natural or L-P gas fuels, engines ideally suited to power take-off, see a Chrysler Industrial Engine Dealer. He can *power-fit your equipment for best performance in the field.*

Remember, too, that Chrysler Power is not expensive. Production-line methods adapted to specialized industrial engine building provide a custom-built engine at mass-production prices. If you prefer, write: ***Department 88, Industrial Engine Division, Trenton, Michigan.***



CHRYSLER *Industrial Engines*

HORSEPOWER WITH A PEDIGREE



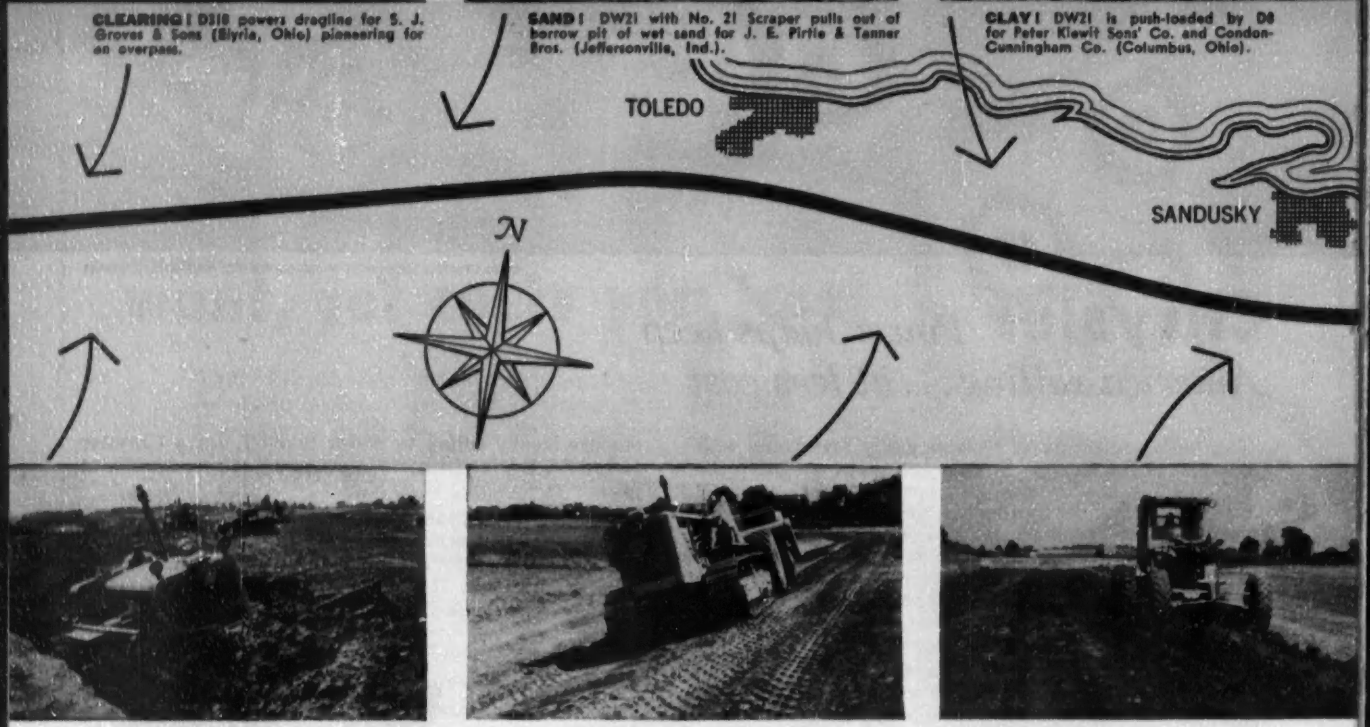
AGRICULTURE • INDUSTRY • CONSTRUCTION • OIL FIELDS

Across the board ...the choice is

CLEARING! D318 powers dragline for S. J. Groves & Sons (Elyria, Ohio) pioneering for an overpass.

SAND! DW21 with No. 21 Scraper pulls out of borrow pit of wet sand for J. E. Pirtle & Tanner Bros. (Jeffersonville, Ind.).

CLAY! DW21 is push-loaded by D8 for Peter Kiewit Sons' Co. and Condon-Cunningham Co. (Columbus, Ohio).



MUD! D8 equipped with No. 8A Bulldozer working in clay at overpass for V. N. Holderman & Sons (Columbus, Ohio).

DRAINAGE! D8 with No. 80 Scraper maintains ditch alongside fill on Winston Bros. Co. (Minneapolis) contract.

HAUL ROADS! No. 12 Motor Grader maintains road for Holloway & Thompson Construction Co. (Livonia, Mich.).

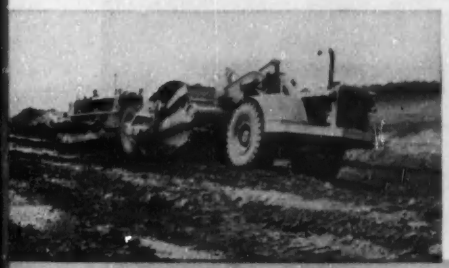
Over 50 contractors are pushing the nation's newest turnpike to completion through sand, bog, clay and rock. As one man, they've turned to big yellow equipment. Eighty-five per cent of their crawlers, 83% of their motor graders are Caterpillar—over 650 pieces of earthmoving equipment in all!

The roster of contractors at work on the Ohio Turnpike reads like a blue book of America's road builders. And from one end of this $326 million road to the other, they have given Caterpillar the biggest vote of confidence in road building history.

Collectively they have more than 650 pieces of Caterpillar-built earthmoving equipment on the job—and that doesn't include scores of CAT* Diesel Engines and Electric Sets. *They have far more Caterpillar equipment at work than all the other makes put together!*

Yet there is no pattern in the type of work being done by this tremendous fleet of Caterpillar equipment. For on its 241 miles, the Ohio Turnpike presents every possible type of terrain and soil—from river bottom to mountains, from quicksand and bog to clay and rock.

on the Ohio Turnpike
Caterpillar



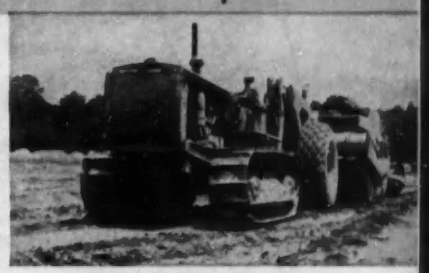
QUICKSAND! D8 push-loads DW21 and No. 21 Scraper in quicksand over blue shale for Ralph Myers Contracting Corp. (Salem, Ind.).

ROCK! D8s in tandem push-load DW21 and No. 21 Scraper in rocky soil for R. B. Potashnick (Cape Girardeau, Mo.).

LONG HAULS! DW20 with W20 Wagon carries shale and rock on a *four-mile haul* for Frank Mashuda Co. (Milwaukee).

HIGH-SPEED HAULING! The first DW21 ever built still does high-speed hauling for Nick Cenci & Sons (Columbus, Ohio).

CRUSHING! D8 loads portable gravel plant powered by D337 for W. J. Menefee Construction Co. (Sedalia, Mo.).



GUMBO! No. 90 Scraper, pulled and push-loaded by D8s, works in gumbo for Harrison Construction Co. (Pittsburgh).

It is an amazing demonstration of the versatility of big yellow equipment. There are 450 Cat track-type Tractors alone — *346 are D8s!* That represents 85% of all the crawlers at work on the project. Eighty-three per cent of the motor graders at work are Caterpillar, and 60% of the rubber-tired tractor-scraper units.

Heavy-duty, dependable Cat Diesel Engines are powering draglines, clamshells, shovels, backhoes, crushers, compressors, loaders. And through long, dark second shifts, Caterpillar Electric Sets are producing the electricity for flood-lighting and contractors' service shops.

Never before has there been such a testimonial to one make of equipment as this 650-unit fleet. Now's the time to follow the lead of road building leaders.

Start standardizing on Caterpillar equipment!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

WORLD'S NO. 1 ROAD BUILDER

Light your next job

the JACK frost way!

Efficient lighting can be attractive . . . even dramatic. Let Jack Frost help you realize full value for your lighting dollar on your next job.

For Full Information On Lighting Service Write:
JACK A. FROST, DEPT. E, 234 PIQUETTE AVE.
Detroit 2, Michigan • TRinity 3-8030

tunnels to towers

TOSS IT TO TERRY!

For over 20 years, Terry has tackled difficult assignments involving steel design, construction or fabrication to close tolerances. If you have a problem involving TV or Radio Towers, Bridges, Tunnels, Piers, Tanks, Industrial Plants, Airplane Hangars, etc.—'phone, write, wire—a Terry structural steel engineer will call.

TERRY
STEEL CONTRACTORS, INC.
ENGINEERS • FABRICATORS • ERECTORS • DESIGNERS

Sales & Executive Offices
The Terry Building
31 East 27th Street, New York 16, N. Y.
Telephone: Murray Hill 9-0011

Rolling outrigger saves set-up time

Leake & Nelson, Inc., Bridgeport, Conn. rigging contractors, have been saving time on their jobs through the use of rolling outriggers.

The outrigger consists of four solid rubber-tired steel wheels fastened to a frame of welded steel channels. The entire frame is fastened through a ball-and-socket arrangement to the threaded rod and hung so that the rubber wheel caps are about ¼ in. off the ground.

A certain amount of scuffing of the caps is expected—especially on sharp turns—but it's far better than unblocking and reblocking in a new location that might be only a few feet away. However if the crane is to remain in one place for some time, the regular steel pyramids shown in their slots on the rear of the rig are usually used.

Bob Callahan of Leake & Nelson admits that the rolling outrigger is not his original idea but is rather "an import from the West Coast with a few refinements we've added."

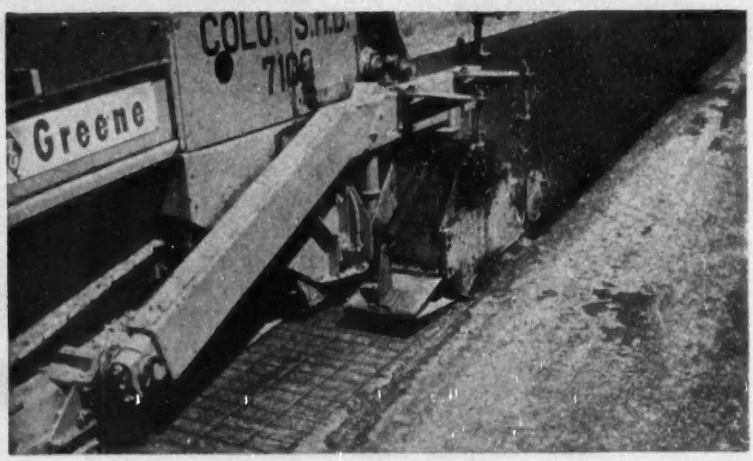
Shoes remove paving fabric wrinkles

An improved method of holding in place welded wire fabric reinforcement of asphaltic concrete has been devised by Colorado State Highway Engineers on a recent resurfacing project on U. S. 85-87 north of Colorado Springs near the newly selected site of the Air Force Academy.

Headed up by Walter Harris, maintenance engineer, the highway department men developed attachments consisting of two foot-wide shoes mounted outside of the machine's crawlers and a longer shoe mounted under the finisher between the crawlers.

The outer shoes are made of a ¼-in. steel plate measuring about a foot wide and two feet long. Bent into a V-shape, one leg of the shoe was attached to the machine by a hinge and pin. The other leg of the shoe is forced against the fabric by an arm and spring arrangement.

A T-shaped steel plate—10 ft long—was attached to the front of the underside of the paver and extended between the tracks back to the conveyor screw. The cross bar of the T was trailed along the fabric just ahead of the conveyor screw; pressure being applied to the plate by a compression spring between it and the machine.



HOLD-DOWN DEVICES keep fabric from "hanging up". Bulges in the fabric are adjusted at the laps where sheets are tied with hog rings on the longitudinal wires only.

PITT CHEM licks weather at Ford Rotunda

When the Ford Motor Company remodeled the well-known Ford Rotunda for its 50th Anniversary exhibits last year, protection of new steel dome supports against year-round exposure to weather and industrial atmosphere was a high priority project. Ford maintenance engineers specified Pitt Chem Tar Base Coatings. You'll discover, too, that no other material does such a complete, economical job of protection.

Pitt Chem Coatings are formulated from coal tar pitch for one and just one purpose—to *stop corrosion*. They're tough. They're durable. And their applied film is up to ten times as thick as ordinary paint. What's more, you don't need special equipment or a degree in engineering to apply them.

If that sounds like the kind of a hard-working, never-say-Uncle protective coating you've been looking for, let's have your maintenance experts and ours make contact. A survey will cost nothing. A letter or phone call will get it started.

W&D 4957

PITT CHEM 101—For Severest Conditions
PITT CHEM 102—Maintenance Coating
PITT CHEM 103—General Purpose Coating
PITT CHEM 104—Potable Water Service
PITT CHEM 105 AQUATAR—A Water Dispersion
PITT CHEM 106 TARMASTIC—Sealing Compound
PITT CHEM 107 PACHKOTE—Specialty Coating
PITT CHEM 110—Specialty Coating

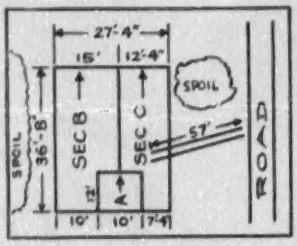
PROTECTIVE COATINGS DIVISION
PITTSBURGH
COKE & CHEMICAL CO.
Grant Building • Pittsburgh 19, Pa.

COAL CHEMICALS • AGRICULTURAL CHEMICALS • FINE CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

(Advertisement)

4 Basements Dug In 9 Hours and 25 Minutes

Young and Dietrich, new, aggressive excavating contractors in Painesville, Ohio, were awarded a contract recently to dig 10 basements and sewer trenches in a new small-home development. A time study was made of the first 4 basements — they were all dug in 9 hours and 25 minutes with a Lorain TL25-J Hoe using a 36" wide, ⅝-yd. bucket. The excavations varied slightly in size, but here are figures on one basement.



Dimensions ....36'8" x 27'4" x 5' deep

Sewer

Sewer Line 57' long x 3' wide x 8' deep.
Start Sewer Line .....11:56 A.M.
Delays ..... 55 mins.
Finish Sewer Line ..... 1:50 P.M.

Total ..... 114 mins.

Basement

Start Section A ..... 1:55 P.M.
Finish Section A ..... 2:15 P.M.

Total ..... 20 mins.

Start Section B ..... 2:35 P.M.
Delays
(backfill sewer trench) .. 10 mins.
Finish Section B ..... 3:55 P.M.

Total ..... 80 mins.

Start Section C ..... 3:57 P.M.
Finish Section C ..... 5:05 P.M.

Total ..... 68 mins.

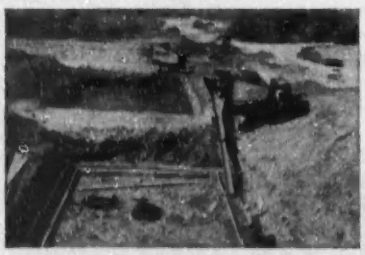
Total for Basement No. 4 — 282 mins.

4 HRS., 42 MINS.
- Sewer actual digging time ..59 mins.
- Basement actual digging time .....2 hrs. 38 mins.
- Time to backfill sewer .....10 mins.
- Delays — Lunch .....30 mins.
- Searching for outlet .....25 mins.

Basement No. 1 was dug in 2 hours and 11 minutes plus 35 minutes delay for checking grade and installing water line.

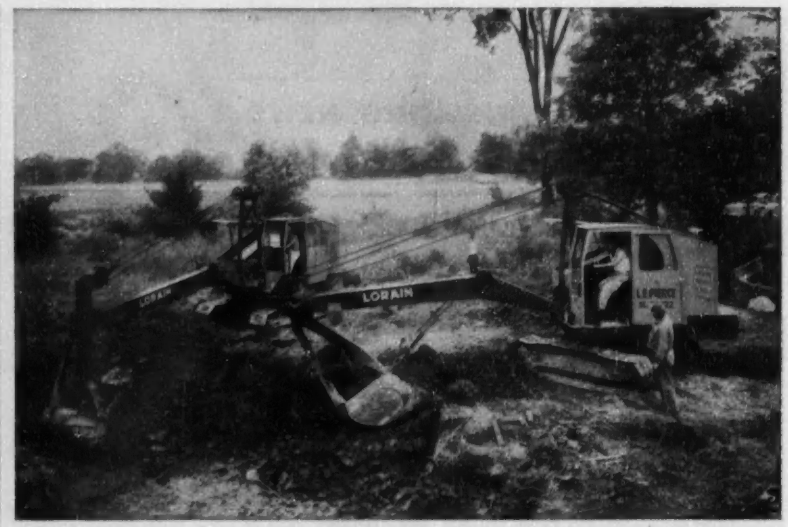
Basement No. 2 took 2 hours and 15 minutes plus 37 minutes delay for checking grade and cleaning up cave-ins on basement No. 1.

Basement No. 3 consumed 2 hours and 21 minutes plus 27 minutes delay for discussion between operator and contractor.



As basement No. 2 is finished at 3:12 P.M. the concrete footers are already being poured for basement No. 3 which was finished just 3 hours and 12 minutes earlier.

The above figures were secured on actual on-the-job operations. Nothing was planned. Nothing was staged. Production figures like these make basement digging profitable. Lorain TL25 Hoes match them all over the world.



HERE'S HOW TO "KEEP OUT OF THE HOLE" WHEN YOU DIG BASEMENTS

You won't get in the hole on costs if you use a TL-25 Hoe for basement digging, because you can work from the top to cut straight sidewalls, trim square corners and grade level floors to reduce hand finishing. You can spoil pile in any direction, dig utility trenches, and forget the problems of building ramps and the high maintenance of constant travel that is necessary with some types of equipment. TL-25's consistently dig an average residence basement in 3 hours or less. And when you get other types of jobs, it is easy to change to a dragline, clamshell, shovel or crane front end to handle them profitably. Many contractors started their careers with this versatile machine that is so adaptable to their growing needs.

There are many reasons why a TL-25 will throw more dirt per day—at less cost. Call your Thew-Lorain Distributor today for the full story.

Thew TL Lorain

WILL KEEP YOU "ON TOP" OF PROFITS

Here's why! High-speed, balanced operating cycle, easy-to-service, hydraulic tread-travel lock, anti-friction bearings, 4 crawler sizes to choose from. Inexpensive to own. These are but a few!

THE THEW SHOVEL CO., LORAIN, OHIO

WRITE FOR HOE BOOKLET — showing many uses of Lorain Hoes of all sizes — on basements, sewer lines, utility lines — jobs that will make you money. Ask for Hoe Booklet.

THEW LORAIN

OFFERING MORE THAN 136 SHOVEL-CRANE COMBINATIONS ON CRAWLERS OR RUBBER TIRES TO BEST FIT YOUR JOB FOR PROFIT!

MEN AND JOBS

Veteran traffic director leaves Kansas City post

Twenty-nine-year-old Jack A. Hutter, a member of the Kansas City, Mo. traffic department since 1948, has succeeded the veteran Thomas J. Seburn as city traffic director. Seburn, who has held the post since 1930, has joined Yale University's bureau of highway traffic as a research associate.

One-way street programs, parking bans on rush-hour streets, notable advances in traffic control and a multimillion dollar system of expressways and boulevard improvements were cited by city officials as among the achievements of Seburn's long tenure, which gained the city national recognition for its traffic handling. Aside from his research work at Yale, Seburn also will teach and represent the university at national conferences on traffic and street lighting.

Hutter, who becomes one of the youngest traffic officials in a major city, has recently been serving as city traffic engineer. A native of Buffalo, N. Y., he was graduated from Cornell in 1947 and did graduate work at the Yale bureau of highway traffic before going to Kansas City in 1948 as assistant traffic engineer.

Division engineer named to succeed TVA nominee

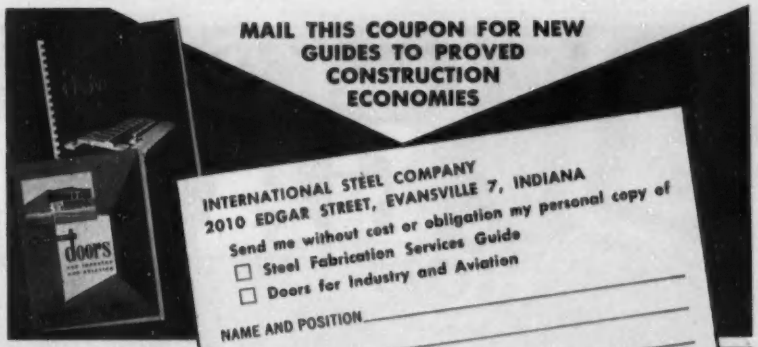
Col. L. E. Seeman has been named to succeed Brig. Gen. Herbert D. Vogel, nominee for Tennessee Valley Authority chairman, as Division Engineer of the Army Engineers Southwestern Division with headquarters in Dallas.

Following wartime service in the China-Burma-India theater, Col. Seeman served in the Manhattan Engineer District, a tour of duty with the Central Intelligence Agency and from 1949 to 1952 as district engineer in Alaska. He comes to his new post from the office of the Army Comptroller.

Men and Jobs briefs

• **Careers—R. A. Larrabee** becomes director of the Baltimore Redevelopment Commission, succeeding **R. L. Steiner,** who has joined the U. S. Housing and Home Finance Agency as deputy chief of slum clearance and urban redevelopment . . . **Lt. Col. E. A. Tillman,** formerly district engineer at Fort Peck, has been assigned

(*Continued on page 88*)


MAIL THIS COUPON FOR NEW GUIDES TO PROVED CONSTRUCTION ECONOMIES
INTERNATIONAL STEEL COMPANY
2010 EDGAR STREET, EVANSVILLE 7, INDIANA
Send me without cost or obligation my personal copy of
☐ Steel Fabrication Services Guide
☐ Doors for Industry and Aviation
NAME AND POSITION
FIRM
ADDRESS
ZONE STATE
CITY
doors

Steel framework for new clothing warehouse at Erlanger, Kentucky,
PALM BEACH COMPANY,
Div. of Goodall-Sanford, Inc.: Lessee
TRAYLOR BROS., INC., Evansville, Indiana: Contractors
INTERNATIONAL STEEL COMPANY: All Structural Steel

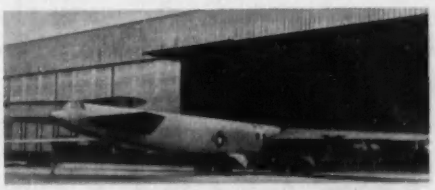
How to Speed the Job AND Spare the Costs!

The project pictured above . . . steel framing for a new Palm Beach Company warehouse . . . exemplifies International's ability to step up construction while holding down costs. This particular contract was figured close, both as to time and costs. Yet International not only met, but bettered a stiff delivery schedule — by shipping the first structural shapes some six weeks after the order date.

International's steel fabrication service is complete — and *completely integrated.* It offers you capable engineering teamwork on any project involving fabricated steel. It's yours to use from the blueprint stage, or at any phase of the job. And International's physical plant combines facilities that can be matched by few other fabricators of metals. These all add up to rapid, reliable service . . . with all-around savings!

Next time you need fabricated steel . . . for routine construction or a complex requirement . . . let us prove the truth of our INTERNATIONAL SERVICE trade-mark. Meanwhile, mail the coupon above for profitable reading.

International Telecanopy Doors for Boeing B-52's — world's longest door of its type for the world's most powerful bombers now in use — at Boeing Airplane Co., Seattle, Washington.



INTERNATIONAL SERVICE

2010 EDGAR STREET
EVANSVILLE 7, INDIANA

AISC

INTERNATIONAL STEEL COMPANY

TUNNEL	LOCATION	LENGTH	BORE	DRILL EQUIPMENT GARDNER-DENVER
Bear River, Mokelumne Project	California	13,520 ft.	8½'x11'	Full
Bingham Tunnel #5840	Utah	7,000 ft.	21'x26'	Full
Carter Lake Pressure	Colorado	5,800 ft.	10'	Full
Cherry Valley Dam Diversion	California	1,280 ft.	18½'	Full
Downsville Dam Diversion Tunnel	New York	1,900 ft.	45'	Full
Duchesne	Utah	31,665 ft.	11'	Full
East Delaware Aqueduct	New York	132,860 ft.	11'4"	Full
Frenchman Hills	Washington	9,200 ft.	16'	Full
Grand Valley Emergency	Colorado	2,240 ft.	13'	Full
P. G. & E. Pitt #4 Tunnel	California	21,500 ft.	23'	Full
Paraiba-Pirai Diversion	Brazil	12,624 ft.	25'x23'	Full
Rattlesnake	Colorado	8,760 ft.	11½'	Full
Rideau River	Ontario	9,000 ft.	7'	Full
Ross Dam Diversion	Washington	2,000 ft.	19½' and 27½'	Full
Sa Carvalho	Brazil	13,400 ft.	17'x17'	Full
Tennessee Creek	North Carolina	4,800 ft.	13'x14'	Full
U of Washington Tunnel	Washington	5,280 ft.	6'x8'	Full
MDC North Relief Sewage	Massachusetts	3¾ miles	12'	Partial
Piney Branch Trunk Sewer	Washington, D. C.	1,875 ft.	15'	Full
Meilleur Atlantique	Quebec	1,575 ft.	11'	Full
		9,000 ft.	10', 9' & 7'	Partial
Sir Adam Beck Hydro-Electric Project	Ontario	Twin 5½ mile	52'	Partial

SINCE 1859

GARDNER-DENVER

- DENVER

tunnel drilling!

Here's the tunnel record . . . that speaks for itself . . .

It adds up to 604,057 feet of tunnel — and remember, this list represents ONLY those tunnels which were drilled during the last five years!

TUNNEL	LOCATION	LENGTH	BORE	DRILL EQUIPMENT GARDNER-DENVER
Hamilton Sewer Project	Ontario	3,300 ft. 2,780 ft.	12½'x12½' 8'x8½'	Full Partial
Cincinnati Water Works	Ohio	14,000 ft.	11'	Full
Santa Cecilia-Vigario	Brazil	12,624 ft.	25'x23'	Partial
Calumet Contract #18C	Illinois	2,000 ft.	7'1"x6'4¼"	Partial
P.G. & E. Hendricks Tunnel	California	4,600 ft.	6'x7½'	Partial
South Laguna Beach Sanitary Sewer	California	12,000 ft.	4'x6'	Full
Spokane Sewer Tunnel (Section B-2)	Washington	6,250 ft.	6½'x7½'	Full
Cobbs Creek Intercepting Sewer	Pennsylvania	6,000 ft.	10'6"	Partial
Metlakatla Indian Community Purple Lake Project	Alaska	2,600 ft.	7'x7'	Full
Boqueron Tunnel #1	Venezuela	5,900 ft.	28.7'x19.7'	Full
Boqueron Tunnel #2	Venezuela	1,560 ft.	28.7'x19.7'	Full
Belvise Creek Project	Italy	16,150 ft.	10'2"	Full
Surco Tunnel Project	Peru	20 km (12.5 miles)	9¼'x8¼'	Partial
Southwest Main Gravity Intercepting Sewer Tunnel	Pennsylvania	18,000 ft.	17' to 8'6"	Full
Bacon Tunnel	Washington	10,000 ft.	21' horse shoe	Full
Detroit Dam Diversion Tunnel	Oregon	230 ft.	31' horse shoe	Full
Detroit Dam	Oregon	1,200 ft.	28'	Full
Lucky Peak Dam	Idaho	1,200 ft.	23'	Full
Eugeria Hidroelectrica Andina S.A.	Peru	7.8 miles	9'x12'	Partial
Laranjeiras	Brazil	3,320 ft.	20'x60'	Full

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada) Ltd., 14 Curity Ave., Toronto 16, Canada

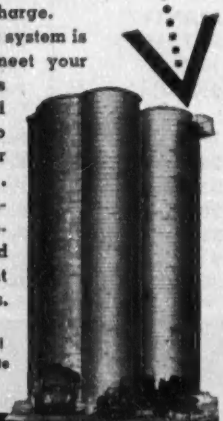
When a
Marietta goes up

your operating costs go down

MARIETTA CONCRETE STORAGE SYSTEMS . . . complete, economical storage and materials—handling installations

Benefit from large capacity storage, today, and complete flexibility for the future with Marietta concrete storage systems. Every storage installation is soundly engineered to improve handling facilities . . . to incorporate essential equipment . . . to provide the most efficient means of discharge. Every Marietta system is designed to meet your industrial needs . . . flexible and adaptable to conversion or expansion . . . efficiently constructed to reduce loss and waste and cut handling costs.

Write, wire or call today, for complete information.



THE MARIETTA CONCRETE CORPORATION
MARIETTA, OHIO
BRANCH OFFICES: 501 Fifth Ave., New York 17, N.Y., Pulaski Hwy. at Race Road, Baltimore 21, Md., 805 Bessemer Bldg., Pittsburgh 22, Pa., 411 Foster St., Nashville, Tenn., Box 5192, Charlotte 6, N.C.

MEN AND JOBS

to the joint mission for military aid to Turkey. . . .

L. S. Hensley has resigned as assistant professor of civil engineering at North Carolina State, to enter private practice at Durham, N. C. . . . **Col. E. M. Eads,** formerly an assistant for the Air Force on the Joint Construction Agency in France, has been put in charge of Air Force construction on the Pacific Coast.

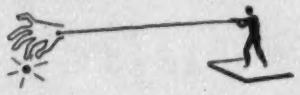
Elmer M. Ward, a member of the technical staff of the Highway Research Board since 1946, has been named assistant director. . . . **Raleigh W. Gamble** becomes the Asphalt Institute's district engineer for the states of Illinois and Wisconsin, after 30 years' service as superintendent of street construction in Milwaukee. . . . **Thomas C. Kavanagh** has given up his duties as professor and chairman of the Department of Civil Engineering at New York University in order to devote full time to his consulting engineering firm, Praeger-Kavanagh, New York City. . . . **Paul D. Haney** has left his post as sanitary engineer director at the Robert A. Taft Sanitary Engineering Center, U. S. Public Health Service, Cincinnati, to become affiliated with Black & Veatch, Kansas City consulting firm.

• **Retirements**—**Carl Rohwer,** senior irrigation engineer for the U. S. Department of Agriculture, soil and conservation branch at Fort Collins, Colo., after 40 years of service with the department. . . . **T. D. Kilkenny** has completed 40 years service as city engineer of Vallejo, Calif., retiring under the compulsory retirement provisions of the city charter.

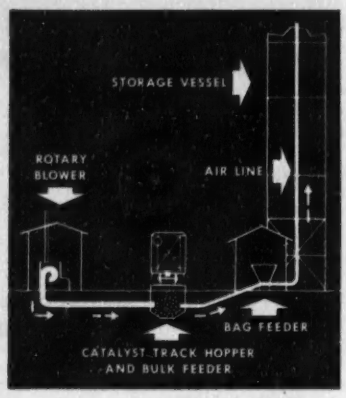
• **Business**—**E. T. Larsen** and **W. C. Rueckel,** become vice presidents of Henry J. Kaiser Co., parent of the Kaiser industrial group. Larsen is manager of engineering . . . **J. F. Fritts** to executive vice president of Mercer-Robinson Co. Inc., materials handling manufacturers . . . **Clarence E. Elderkin** becomes president of Consolidated Engineering Co., Inc., Baltimore constructors . . . **L. T. M. Ralston** to president of "Quick Way" Truck Shovel Co., of Denver.

Irving B. Purdy, who has directed a wide range of Merritt-Chapman & Scott projects both in the U.S. and abroad for the past 17 years, has been elected a vice-president of the company in charge of administration of the industrial and building construction division. . . . **Ralph H. Fulbright** has been appointed vice-president in charge of production for Rilco Laminated Products Inc.

what's NEW in Engineering



A new electronically-controlled manipulator has been developed by engineers at Argonne National Laboratory to permit scientists to handle "hot" radioactive materials at a distance of several hundred feet or from behind sealed barriers. The new unit, which uses electrical signals, reproduces the same seven basic motions involved in grasping, lifting, moving and turning objects.



Replacing a conventional mechanical batch system of handling catalyst, Kaiser Engineers developed a continuous air stream bulk handling method. Operating costs were reduced by this unique system which moves catalyst at 7½ tons per hour with an attrition loss of less than the 2% maximum guaranteed.

Modern Physics for the Engineer, edited by Louis N. Ridenour, is a collection of lectures given by a group of distinguished physicists and others at the University of California, Los Angeles. The aim of the book is to give engineers a brief account of some of the most interesting developments in this fundamental physical science. Published by McGraw-Hill.

Kaiser Engineers has approximately 600 professional engineers, technical experts and staff ready to tackle your problem in design, engineering or construction. Call or write: Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.

Big Rigs
Pay Off In Profits!

DON YOUNG, SUPT. GLENN OLSON, PRES.

An Actual Job Report from IH

THE G.A. OLSON CONSTRUCTION COMPANY UP IN MARSHALL, MINNESOTA, IS A LONG WAY FROM BEING A BIG OUTFIT... BUT IT DOES THINGS "IN A BIG WAY." GLENN AND BRUCE OLSON -- BOTH IN THEIR EARLY 30'S -- RUN THE SHOW...

IT'S A TIGHT SCHEDULE, BRUCE, BUT WE'VE GOT THE MEN AND EQUIPMENT TO DO THE JOB.

WE KNOW FROM PAST EXPERIENCE WHAT THOSE BIG INTERNATIONALS CAN DO. WE'LL LICK IT, GLENN!

THE OLSON BOYS STARTED EARLY... BACK IN '42, THEIR DAD, A VETERAN MINNESOTA CONTRACTOR, HAD TAKEN ON A TOUGH ASSIGNMENT WHEN HE PITTED THE G.A. OLSON CONSTRUCTION COMPANY AGAINST THE CANADIAN WILDERNESS. HIS WAS ONE OF SEVERAL AMERICAN OUTFITS PUSHING THE VITAL ALCAN DEFENSE ROAD THROUGH AHEAD OF THE SURVEYORS...

WE'D BETTER FELL A COUPLE OF LOGS ACROSS THIS BOG... THEN BRING UP THE EQUIPMENT IN THE MORNING.

RIGHT, DAD. THEN WE'LL BE SET TO TACKLE THE NEXT 10-MILE STRETCH AT DAWN.

I'LL GO BACK AND GET THE CREW TO 'LEAP-FROG' THE EQUIPMENT THROUGH THE OUTFITS WORKING BELOW.

THE CONSTRUCTION CAREERS OF THE TWO BOYS WERE INTERRUPTED BY THEIR SERVICE IN WORLD WAR II. BUT, WHEN PEACE CAME...

NOW WE CAN TEST THOSE 'BIG EQUIPMENT' IDEAS OF YOURS, GLENN.

I'VE BEEN DOING A LOT OF FIGURING, BRUCE... AND I'M CONVINCED THAT BIG RIGS WILL PAY OFF IN PROFITS. LET'S TALK TO DAD.

AND SOON...

IT'S THE BOYS' IDEA, TOM -- BIGGER, FASTER EQUIPMENT.

YOU'LL BE GLAD YOU CHOSE INTERNATIONALS. THEY STAND UP.

INDUSTRIAL POWER

THIS '24' HAS THE WORK CAPACITY THAT'LL MAKE OUR PLAN WORK, BRUCE!

THE OLSONS' FIRST I H CRAWLER WAS FOLLOWED BY ANOTHER... AND ANOTHER. WHEN THEIR FATHER DIED IN 1948, IT SEEMED NATURAL FOR THE TWO YOUNG MEN TO CARRY ON THE FINE RECORD AND REPUTATION HE HAD BUILT SINCE HE STARTED THE COMPANY IN 1923.

HERE COME THE INTERNATIONALS

EVEN THOUGH WE ARE A MEDIUM-SIZE OUTFIT, THE BIGGEST, FASTEST EQUIPMENT WE CAN GET WILL CUT OUR UNIT DIRT-MOVING COSTS.

IT'S THE ONLY WAY WE CAN MEET COMPETITION, GLENN. WE'VE GOT TO HAVE A RUBBER-TIRED MACHINE TO HANDLE OUR LONG HAULS ...ONE THAT WILL KEEP MOVING DIRT WITHOUT DOWNTIME.

THEY HAD TO MAKE THE RIGHT CHOICE... SO THEY WENT RIGHT TO THE FACTORY BEFORE BUYING--

I LIKE THIS CLEAN DESIGN AND UNIT CONSTRUCTION, GLENN. IT'S SURE TO BE RUGGED.

IT SHOULD GIVE US VERY LITTLE DOWNTIME... AND BE EASY ON THE MAINTENANCE CREW. THAT LOOKS LIKE THE CHOICE.

COPYRIGHT 1954, PICTORIAL MEDIA, INC.

ON JOB AFTER JOB, THEIR DECISION PAID OFF. THE BIG, FAST RUBBER-TIRED RIGS WITH AN ALL-INTERNATIONAL TEAM OF CRAWLERS AND SCRAPERS--PERMITTED LOW BIDDING AND REALLY PROFITABLE PERFORMANCE... WERE USED ON MORE THAN 90% OF THE G.A. OLSON COMPANY JOBS...

AND THEN, IN 1952, CAME ONE OF THE TOUGHEST TESTS... 12 MILES OF REBUILDING ON HIGHWAY 59 IN MINNESOTA. THEY BID $173,000 FOR 386,000 CUBIC YARDS IN WET, SWAMPY LAND... AND THE BID WAS LOW. THEY HAD ONLY A 90-DAY TIME LIMIT!

RADIO FORECASTS MORE RAIN... AND PLENTY OF IT, GLENN.
WE'RE RACING THE CALENDAR NOW! OUR INTERNATIONALS HAVEN'T LET US DOWN YET, BRUCE. WE'VE GOT TO KEEP THEM MOVING...

AS RAIN FELL FASTER THAN THE EARTH COULD SWALLOW IT... 14 INCHES IN 10 DAYS... WATER LAY INCHES DEEP ON THE HIGHWAY RIGHT-OF-WAY. ALTHOUGH THE OLSON OUTFIT WAS PINNED DOWN FOR DAYS AT A STRETCH, THEIR EXPERT OPERATORS AND TEAM OF BIG INTERNATIONALS KEPT LOADS OF SOGGY, WATER-LOGGED MATERIAL MOVING ON DAYS WHERE IT LOOKED IMPOSSIBLE...

AS THE TIME LIMIT DRAWS NEARER AND NEARER, MEN AND MACHINES PUSH HARDER AND HARDER IN THEIR BATTLE AGAINST THE ELEMENTS. AND THEN--

THE WEATHER CLEARED.. AND WORK SPEEDED UP. FAST LOADING, CARRYING AND DUMPING BROUGHT THE G.A. OLSON COMPANY THROUGH AHEAD OF SCHEDULE!
WELL, YOU CAN SAY WE HAD PRACTICALLY NO MACHINE DOWNTIME. THOSE I-H UNITS CAN REALLY TAKE A BEATING!
FACT IS -- SINCE WE'VE GOTTEN ALL I-H EQUIPMENT, WE'VE CUT OUR DOWNTIME IN HALF.

YES, WE'RE MOVING MORE DIRT NOW WITH LESS EQUIPMENT... AND AT A LOWER COST PER YARD-- THANKS TO INTERNATIONAL!
WELL, THANKS, MR. OLSON. IT'S A GREAT STORY... AND WE'LL TELL IT JUST AS IT HAPPENED.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

INTERNATIONAL HARVESTER

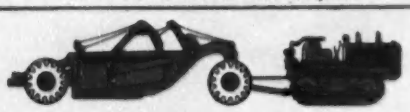
INTERNATIONAL

MAKES EVERY LOAD A PAYLOAD

Now All in One Family

the hardest-working work teams in the world!

TD-24 crawler with matched scrapers



TD-18A crawler with matched scrapers

TD-24 crawler with bulgrader

TD-9 crawler with hydraulic bulldozer

TD-6 crawler with hydraulic bulldozer

TD-14A crawler with cable bulgrader

TD-9 tractor with front-end loader

TD-18A crawler with sideboom

Model 2T-75 two-wheel, rubber-tired tractor with 18-yard heaped capacity scraper

Model 2T-75 two-wheel, rubber-tired tractor with 20-yard heaped capacity bottom dump wagon

Model 2T-55 two-wheel, rubber-tired tractor with 13-yard heaped capacity scraper

CR-611-D. 6-20. LITHOGRAPHED IN UNITED STATES OF AMERICA

BOOKS

Fire protection updated

NFPA HANDBOOK OF FIRE PROTECTION—11th Edition, by Crosby-Fiske-Forster. 1,654 pp. National Fire Protection Assn., 60 Batterymarch St., Boston 10, Mass. $10.50.

The new edition is a complete revision of the 10th edition, which was published in 1948. While it still presents in compact form, for ready reference, essential information on fire prevention and protection that is recognized by authorities on good practice, the new volume also offers many new topics not treated in the previous edition.

A complete summary of fire laws in the states and Canadian provinces is included. New-type automatic spray sprinklers are illustrated, as well as new dry-pipe valves, water-flow alarms and other new automatic sprinkler devices. Flame-spreading characteristics of interior finish materials are tabulated, and there are new tables on fire-resistance ratings of walls, floors, roofs, columns, and various types of building construction. Fire-hazard properties of plastics are listed. New extinguishing agents are described. And information is given on thermostats and other automatic fire alarm devices.

The chapter on water spray, completely rewritten, contains tables of discharge characteristics of each brand and model of spray (fog) nozzle. Latest data on fire-retardant treatments are presented. And tables of automatic sprinkler performance in actual fires, and of the causes of fire by occupancy classification, have been extensively revised to give an up-to-date statistical background for fire-prevention measures.

Miscellaneous Notes

• **Two bibliographies** with abstracts of Atomic Energy Commission reports of interest to the construction industry are now available and may be purchased for 25¢ apiece from the Office of Technical Services, Department of Commerce, Washington 25, D. C. One covers construction and civil engineering, mining and geology (TID-3050, pts 6 and 7). The second deals with industrial management and health and safety (TID-3050, pts 8 and 9). Many of the reports abstracted may be purchased in full from the Office of Technical Services or inspected at the 40 regular AEC deposi-

(*Continued on page 94*)

"... it's the 'Master' of the situation."

"Our Master Turn-a-Trowel knocks down every hump on the floor slab." "I've used others that ride right over the uneven spots."

Contractors can make those statements because the Turn-a-Trowel has rigid—not flexible—blades. Bumps in the floor *have* to come off, so Master-finished floors are flat.

And, because Master blades *adjust* for either floating or finishing, they stay right on the machine. You can't lose or mislay them.

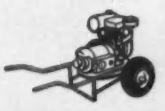
The Master Turn-a-Trowel is a rugged, powerful, top-quality piece of equipment that will help you finish concrete better, quicker and cheaper. For more information mail the coupon below. No obligation.

☐ **Turn-A-Trowel.** Finish and finishes; rigid blade mounting gives precision finish; float and finish blades in single unit, can't get lost; gas and elec.; 34", 48" sizes.

☐ **Concrete Vibrator.** 9,000 rpm vibration, yet lightweight; rugged, gives long service; gas and elec.; wheel mounting available; accessory tools; 1½ to 6 hp power units.

☐ **Remote Power Vibrator.** This "Hycycle" runs 2 high-speed vibrators (10,300 rpm) as far as 300' from power unit; mounted on wheelbarrow, wt. only 172 lbs.; 6.6 hp engine.

☐ **Midget Trowel.** New Lightweight, one man carries; gets into tight spots; only 24" across yet does top trowel job 6 times as fast as by hand. 70 lbs.; 1.6 hp engine.



☐ **Portable Generator Plants.** AC or DC; gas, diesel, natural gas engines, ½ KW to 12.5 KW; portable mountings. Also continuous duty plants up to 20 KW. Floodlights.

☐ **Vibrating and Finishing Screed.** Produces better quality slab than any other method we know, by superior deep vibration. Mixers can't keep up with high speed strike-off, compaction and finish (follow up with broom, bull float or Turn-A-Trowel). Handles low slumps, 3½" down to zero. Gas or elec. (any voltage, phase or cycle); 6' to 30' lengths.

☐ **Portable Space Heater.** Clean, instant, odorless heat blown where you want it; rugged, longlasting, trouble-free; uses kerosene or fuel oil; 140,000 to 400,000 BTU.

MASTER

SEND FOR CATALOGS and full information. Check boxes above, under products you're interested in. Clip lower half of ad and mail to Master Vibrator Co. 143 Stanley Avenue, Dayton 1, Ohio

NAME_____ COMPANY_____

STREET_____ CITY_____

A POWER PLANT

Located at Olmsted Air Force Base, Middletown, Pa., this steam generating plant is sided with more than 7,000 square feet of Stainless Steel panels. Architect-Engineer: Gannett, Fleming, Corddry & Carpenter, Harrisburg, Pa. General contractor: R. S. Noonan, Inc., York, Pa.

A LABORATORY

Two types of Stainless Steel panels combine to give the Metallurgical Laboratory at United States Steel's Fairless Works an attractive exterior. Architect: Hoffman and Crumpton, Pittsburgh, Pa. General contractor: Joseph R. Farrell, Inc., Philadelphia, Pa.

THESE THREE BUILDINGS WENT UP FASTER, WILL STAY ATTRACTIVE LONGER WITH

Stainless Steel panel construction

• Although Stainless Steel was first used as a material of construction more than 25 years ago, its use in the form of insulated panels is a comparatively recent development. But architects and engineers have accepted it so rapidly that a wide variety of buildings using Stainless Steel panel construction are completed and occupied today.

Here are three structures . . . differing widely in size, in design and in purpose . . . that demonstrate the advantages of Stainless Steel panel construction.

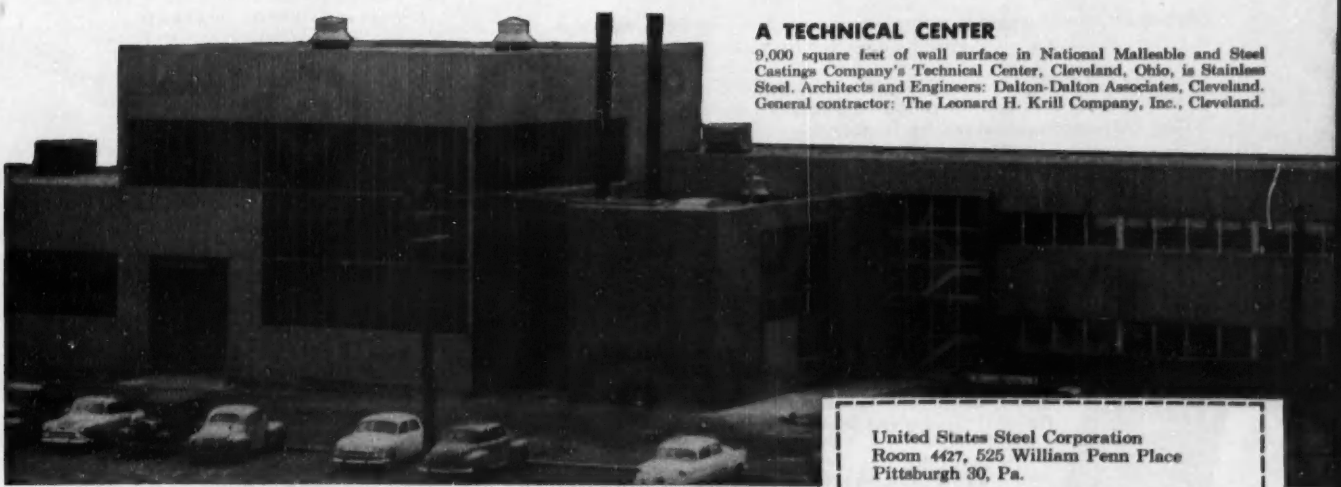
From the standpoint of design, Stainless Steel panel construction offers simple, clean lines with a material that never loses its attractive appearance. Stainless Steel panels can be combined with other materials with pleasing results. And their method of erection—they are hung on the structural framework—allows fullest possible utilization of interior floor space.

Erection is quick and cost-saving. It requires a minimum crew and goes forward in any type of weather.

Once the building is occupied, Stainless Steel panel construction continues to pay off. Maintenance is at a minimum . . . no painting is required. The low thermal conductivity of these insulated panels holds down heating and cooling costs. And the life of the building is long.

• • •

If you would like more information on panel construction with U·S·S Stainless Steel, mail the coupon below.



A TECHNICAL CENTER

9,000 square feet of wall surface in National Malleable and Steel Castings Company's Technical Center, Cleveland, Ohio, is Stainless Steel. Architects and Engineers: Dalton-Dalton Associates, Cleveland. General contractor: The Leonard H. Krill Company, Inc., Cleveland.

United States Steel Corporation
Room 4427, 525 William Penn Place
Pittsburgh 30, Pa.

☐ Please send me literature on Stainless Steel panel construction.

☐ Please arrange to have fabricators of Stainless Steel wall panels send me literature on their particular type of construction.

Name..... Title.....

Address.....

City..... State.....

United States Steel produces only the Stainless Steel from which panels of this type are made; the panels themselves are fabricated by our customers.
Stainless Steel panels on these buildings fabricated and erected by the H. H. Robertson Co., Pittsburgh, Pa.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • NATIONAL TUBE DIVISION, PITTSBURGH
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS USS PIPE • TUBES • WIRE • SPECIAL SECTIONS

UNITED STATES STEEL

new CENTRIFUGAL PUMP

Optional features MAKE IT WIDELY ADAPTABLE

From a tough liquid handling problem to pumping just plain water, the new Deming Fig. 4011 series end suction centrifugal pump is "matched to the job" with the proper liquid end and proper power end.

Many years of experience in centrifugal pump design have been incorporated in this pump to make it an outstanding addition to the Deming line of centrifugal pumps. Some of the many features are:—

Semi-open, non-clogging type impellers of extra heavy, three-vane construction; available with wiping vanes for handling special liquids.

Deep packed stuffing box with grease or water lubrication is furnished as standard construction. For special applications, various other types of stuffing box construction can be furnished including mechanical seals.

New four-piece separate liquid end assembly permits special construction in corrosion-resistant metals with the power end of standard material. Other optional features for abrasive or other special services can be supplied.

Sizes range from one through five-inch discharge with capacities up to 1000 gallons per minute and maximum heads up to 250 feet. Units are available with electric motor (as illustrated), gasoline or diesel engine driven, with pulley for belt drive or pump only.

Write for new Bulletin No. 4011 which contains complete details, illustration of construction and performance data on Fig. 4011 Deming End Suction Centrifugal Pumps.

THE DEMING COMPANY
536 Broadway • Salem, Ohio

Specify DEMING PUMPS

tory libraries located throughout the country. The AEC also has begun publication of "Nuclear Notes for Industry," prepared by the Technical Information Service at Oak Ridge, Tenn. It abstracts current AEC unclassified reports.

• **A new engineering monograph** entitled, DESIGN CRITERIA FOR CONCRETE GRAVITY AND ARCH DAMS, has been added to the list of such publications available from the U. S. Bureau of Reclamation, Denver, Colo. Authored by F. D. Kirn, it presents the conclusions of a panel of 11 bureau engineers. Like other monographs in the series, it was prepared primarily for the bureau's own use, but may be purchased for 30c. The previous monographs also available are:

No. 1—PETROGRAPHY AND ENGINEERING PROPERTIES OF IGNEOUS ROCK
No. 2—MULTIPLE CORRELATION IN FORECASTING SEASONAL RUN-OFF
No. 3—WELDED STEEL PENSTOCKS
No. 4—PROJECT EFFECT ON SOUTH PLATTE RIVER POLLUTION
No. 5—SOAP LAKE SIPHON
No. 6—STRESS ANALYSIS OF CONCRETE PIPE
No. 7—FRICTION FACTORS FOR LARGE CONDUITS FLOWING FULL
No. 8—THEORY AND PROBLEMS OF WATER PERCOLATION
No. 9—DISCHARGE COEFFICIENTS FOR IRREGULAR OVERFALL SPILLWAYS
No. 10—REINFORCED CONCRETE DESIGN DATA
No. 11—HYDRODYNAMIC PRESSURES ON DAMS DUE TO HORIZONTAL EARTHQUAKE EFFECTS
No. 12—STRESSES AROUND A GALLERY DETERMINED BY THE PHOTOELASTIC INTERFEROMETER
No. 13—ESTIMATING FOUNDATION SETTLEMENT BY ONE-DIMENSIONAL CONSOLIDATION TESTS.
No. 14—BEGGS DEFORMETER. STRESS ANALYSIS OF SINGLE-BARREL CONDUITS
No. 15—PHOTOELASTIC STRESS ANALYSIS OF BRIDGE PIERS
No. 17—SURGE CONTROL ON THE COACHELLA PIPE DISTRIBUTION SYSTEM
No. 18—HYDRAULIC LABORATORY PRACTICE
No. 19—DESIGN CRITERIA FOR CONCRETE GRAVITY AND ARCH DAMS

New engineering books

INTRODUCTION TO NUCLEAR ENGINEERING —By R. L. Murray. 418 pp. Prentice-Hall, 70 Fifth Ave., New York, N. Y. $9.35.

URBAN TRAFFIC: A FUNCTION OF LAND USE—By Robert B. Mitchell and Chester Rapkin. 226 pp. Columbia University Press, 2960 Broadway, New York 27, N. Y. $5.00.

(*Continued on page 101*)

Put a P&H where the problems are . . .

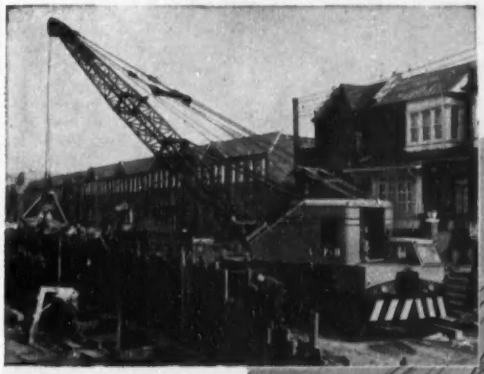
Stronger . . . More Stable 555A TC

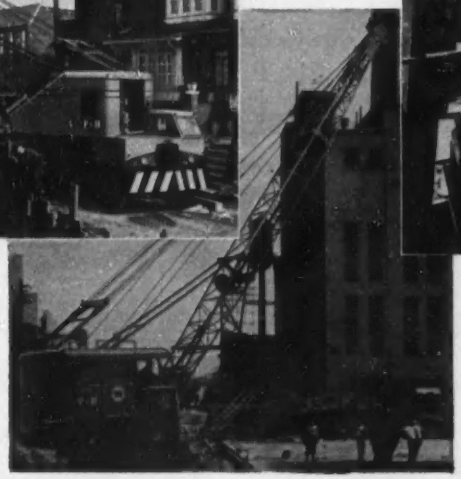
with the precision response of low-pressure hydraulic control!

Fast-moving mobility plus greater stability give P&H Truck Cranes a big edge over ordinary machines. That's why you find so many big contractors depending on P&H Truck Cranes exclusively. They not only handle the run-of-the-mill jobs economically . . . they also take on the big boom lifts, and the special jobs that call for extreme precision.

The difference is obvious when you start to compare. P&H Truck Cranes are modern in every detail . . . all-welded throughout . . . better balanced, easier to handle on road and job. There are many other P&H refinements that keep you working steadily at lower cost . . . *live roller* circle, torsion-bar mounted front axles, triple-safe boom hoist, to name a few. *Remote control available.* Best of all you can afford a modern P&H Truck Crane. Sizes from 7- to 35-ton capacity.

P&H 555A TC with clamshell attachment on sewer job. Owned by R. Tomasetti, Brooklyn, N. Y.





Here's how A. Catapano of Glendale, N. Y. gets sewer jobs done fast with a P&H 555A TC clamshell.

P&H 555A TC owned by Hendrickson Bros., Valley Stream, N. Y., handling 1½-yd. concrete bucket on a 60-ft. boom.

See your P&H dealer... NOW!

P&H TRUCK CRANES

HARNISCHFEGER CORPORATION

MILWAUKEE 46, WISCONSIN

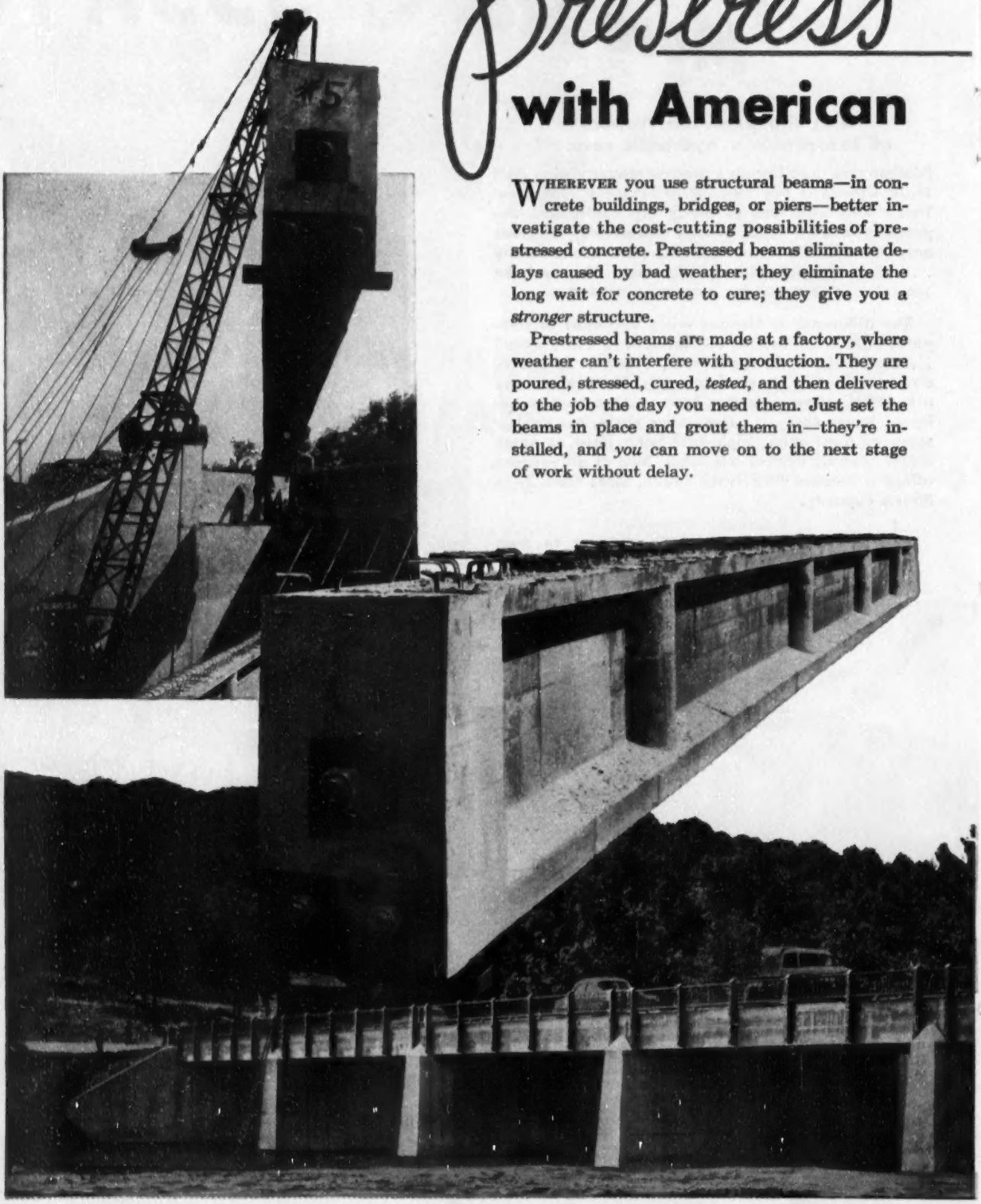
the P&H *Line*

To speed construction

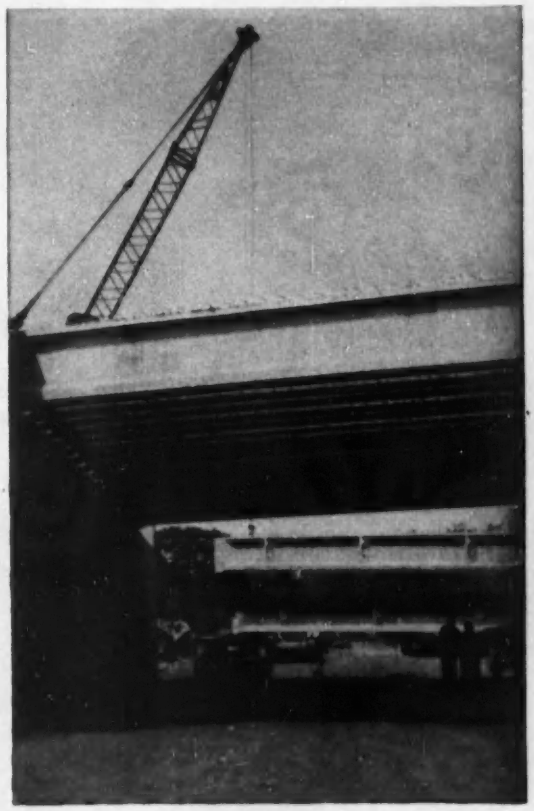
prestress with American

WHEREVER you use structural beams—in concrete buildings, bridges, or piers—better investigate the cost-cutting possibilities of prestressed concrete. Prestressed beams eliminate delays caused by bad weather; they eliminate the long wait for concrete to cure; they give you a *stronger* structure.

Prestressed beams are made at a factory, where weather can't interfere with production. They are poured, stressed, cured, *tested*, and then delivered to the job the day you need them. Just set the beams in place and grout them in—they're installed, and *you* can move on to the next stage of work without delay.



and cut costs your concrete wire and strand



Outstanding developments like American *Super-Tens* Wire and Type PS American Strand make the above advantages possible, because final stress allowable on these special wire products is approximately *five times* greater than that permissible with ordinary concrete reinforcement. This greater force binds the concrete together, prevents open cracks, gives the finished beam much better tensile strength with less reinforcing steel.

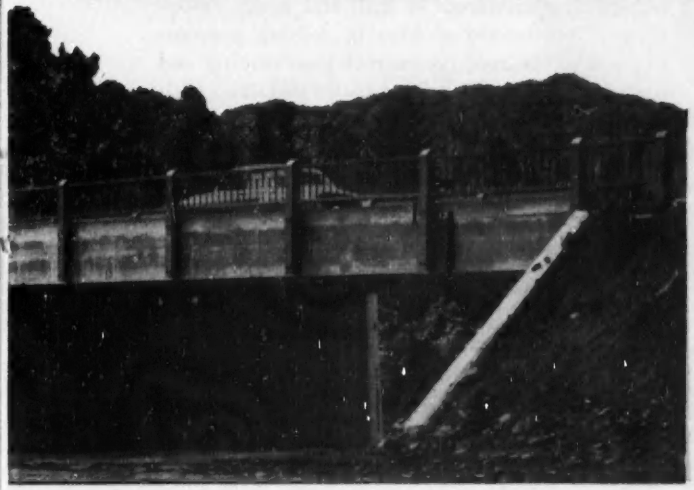
American Steel & Wire makes a high quality wire or strand for every successful method of prestressing concrete, and our engineers have extensive prestressing experience to draw from. For their help on your next job, just mail the coupon.

AMERICAN STEEL & WIRE DIVISION · UNITED STATES STEEL CORPORATION · GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN *Super-Tens* WIRE *and* TYPE PS AMERICAN STRAND

USS

UNITED STATES STEEL



American Steel & Wire
Room 842, Rockefeller Building
Cleveland 13, Ohio

I want all the facts about American *Super-Tens* Wire and Type PS Strand.

☐ Send me your free booklet, which contains technical data.

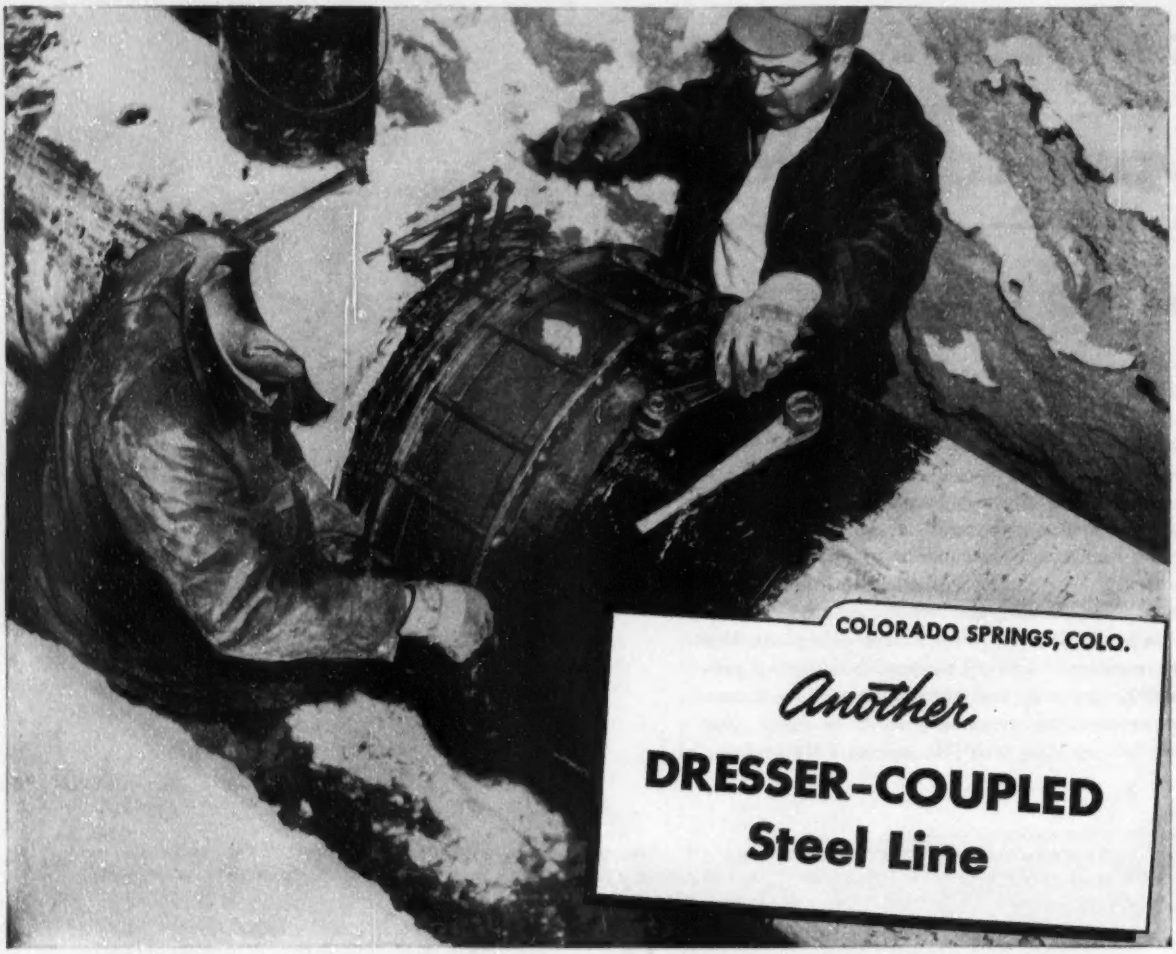
☐ Have your local representative call on me as soon as possible.

Name..... Title.....

Company.....

Address.....

City & State.....



DELIVERS WATER CHEAPER!

Colorado Springs installs high-pressure, 30-inch line in rugged mountain terrain with minimum of heavy equipment.

High-pressure steel pipe—50,000-lb. yield—was used in this line carrying water from the South Platte River to Catamount Reservoir near Divide, Colorado.

Portions of this force main were designed to operate at pressures up to 800-lb. psi. A Dresser-Coupled steel line offered engineers positive assurance of permanently tight joints.

Fast construction schedules were made and *kept* because Dresser Couplings went together quickly and easily regardless of weather or trench conditions. Laying costs were reduced by the ability of small crews to handle and join lighter weight steel pipe with a minimum of skill and heavy equipment. The absence of heat in joining prevents damage to the coal tar enamel pipe coating and lining. Glass-smooth linings assure sustained high flow-coefficients.

The result—another line that delivers, and will keep delivering water cheaper.

✓ ***BE SURE*** **you get the *best* line at the *best* price. Always put steel pipe and Dresser Couplings in *your* specifications.**

DRESSER COUPLINGS

Dresser Manufacturing Division, 69 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston, Texas; 101 S. Bayshore Highway, South San Francisco, California. Sales Offices: New York, Philadelphia, Chicago, Houston, South San Francisco. In Canada: Toronto, Ont.

BOOKS

ELEMENTARY FLUID MECHANICS—By John K. Vennard. 401 pp. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $5.50.

DRAWING SKETCHING AND BLUEPRINT READING—By Shriver L. Coover. 377 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $3.96.

STRUCTURAL DESIGN IN REINFORCED CONCRETE—By Clifford D. Williams and Charles E. Cutts. 308 pp. The Ronald Press Co., 15 East 26th St., New York, N. Y. $6.00.

Reports and pamphlets

INDUSTRIAL FIRE BRIGADES TRAINING MANUAL—National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass. $3.25

ANALYSIS OF 1952 RADAR AND RAINGAGE DATA—Reports of Investigation No. 21 State Water Survey Division, Urbana, Ill.

DESIGN CRITERIA FOR CONCRETE GRAVITY AND ARCH DAMS—Engineering Monograph, No. 19, Bureau of Reclamation, Technical Information Branch, Denver Federal Center Denver, Colo. $0.30

REPORTS TO THE LOS ANGELES METROPOLITAN TRANSIT AUTHORITY ON A MONORAIL RAPID TRANSIT LINE—Los Angles Metropolitan Transit Authority, 2233 Beverly Blvd., Los Angeles 57, Calif.

CONSTANTS FOR DESIGN OF CONTINUOUS GIRDERS WITH ABRUPT CHANGES IN MOMENTS OF INERTIA—Bulletin 176, IOWA ENGINEERING EXPERIMENT STATION, Iowa State College, Ames, Iowa.

DIGEST OF SEWERAGE ENABLING ACTS of the State of California—State Water Pollution Control Board Sacramento, Calif. Publication No. 1. $0.50

APPLICATIONS OF CASTIGLIANO'S THEOREMS TO THE SOLUTION OF RIGID FRAMES—Department of Civil Engineering, POLYTECHNIC INSTITUTE OF BROOKLYN 99, Livingston St., Brooklyn, N. Y.

RECORD OF EXPERIMENTAL AIR-ENTRAINED CONCRETE 10 TO 14 YEARS OF CONSTRUCTION — PORTLAND CEMENT ASSOCIATION, 33 West Grand Avenue, Chicago 10, Ill.

VERMICULITE—Information Circular 7668, Bureau of Mines, Department of the Interior, Washington 25, D. C.

PLANE COORDINATE TABLES (2½ Minute) issued recently by the U. S. Coast 4 Geodetic Survey are as follows: MINNESOTA, Special Publication No. 299 ($.75); WISCONSIN, SP No. 308 ($.60); NORTH DAKOTA, SP No. 309 ($.70);

(*Continued on page* 104)

GET UP TO

200

RE-USES

With

PLYGLAZE®

CONCRETE FORM PANELS

PLYGLAZE gives you the strength and toughness of Exterior plywood—plus the *extra* stamina, *extra* durability of flint-hard, glass-smooth fused resin fiber surfaces. These tough, virtually indestructible surfaces coupled with plywood's rugged strength, mean maximum re-use—80, 150 or even up to 200. As a matter of fact, *over* 200 re-uses have been recorded. Specify Plyglaze on your next job. Treat it with care, plan and build forms for long service and you, too, can get uses up in the hundreds.

Plyglaze comes in 4′ x 8′ panels; ½″, ⅝″, and ¾″ thick. For complete data, write St. Paul & Tacoma Lumber Co., Tacoma 2, Wash.

ANOTHER MEMBER OF THE FAMOUS TREE LIFE FAMILY OF FOREST PRODUCTS

For TOUGH assignments

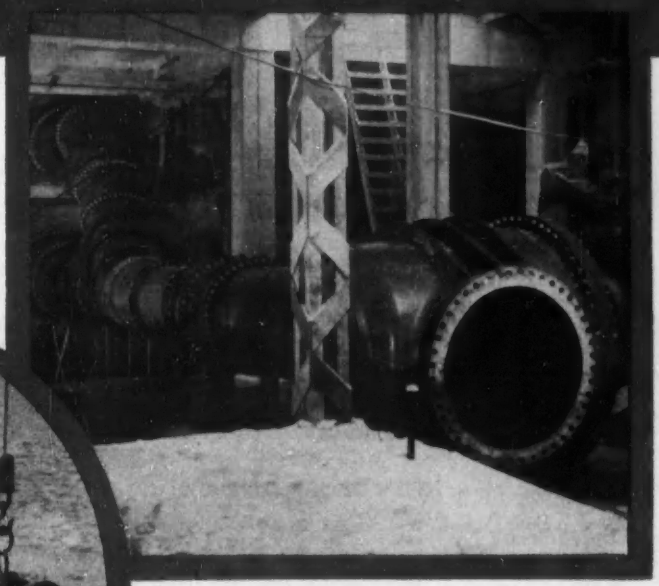
When pipe is to be installed under conditions which make repairs difficult at best, the engineering profession relies on cast iron pipe. Such installations, for example, as outfall sewers, river crossings, and sealed piping in sewage treatment and water filtration plants. *Any* installation, where repairs should be a remote possibility, calls for rugged cast iron pipe. Its great beam-strength, compressive-strength and shock-strength—plus its effective resistance to corrosion—result in long life with negligible repairs and maintenance cost. For information write: Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Avenue, Chicago 3, Ill.

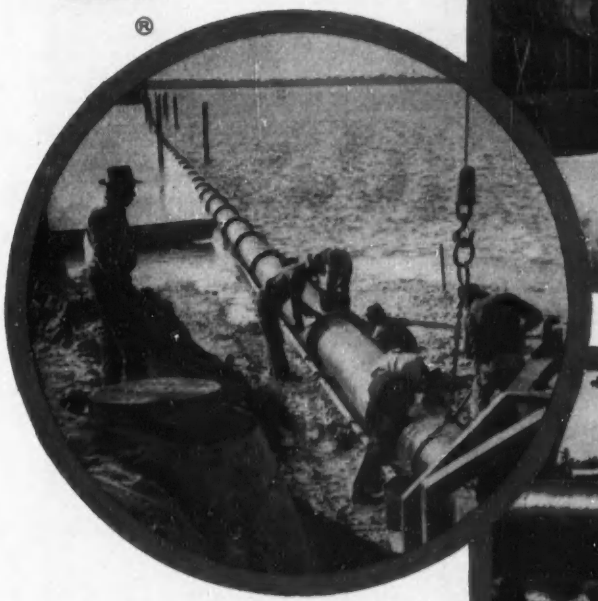
(above)
Installing cast iron belt feeder main for water supply system in Casper, Wyoming.

(right)
Cast iron pipe for discharge lines from water circulating pump house in a midwest oil refinery.

CAST IRON PIPE

use this RUGGED pipe





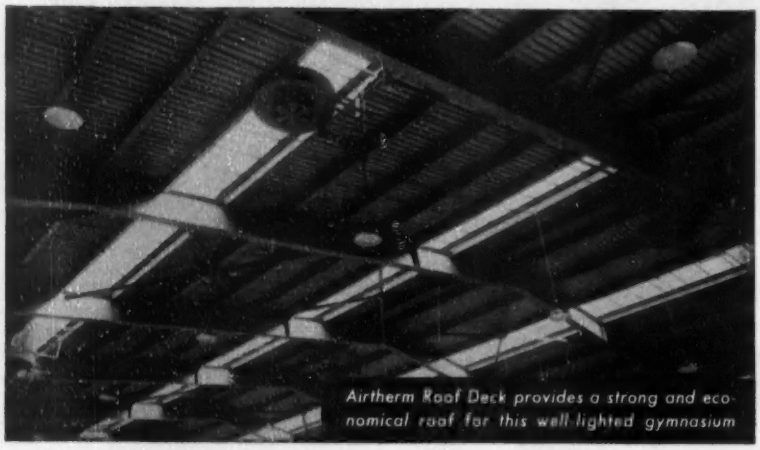
(above)
Cast iron pipe for outfall into St. Joseph Sound from sewage disposal plant at Dunedin, Fla.

(top right)
Cast iron pipe and fittings installed in world's largest water filtration plant in Chicago, Ill.

(at right)
Installing 30" cast iron pipe for sewage treatment plant at Panama City, Fla.

SERVES FOR CENTURIES...

WIDER Airtherm ROOF DECK



Airtherm Roof Deck provides a strong and economical roof for this well-lighted gymnasium

designed for a wide range of applications

Airtherm Steel Deck Sheets are furnished in 30" widths (the widest in the industry) with five ribs spaced on 6" centers. These ribs, 1⅝" deep, have a bearing surface of ⅝" and a top opening of only ¾" wide. These wider, self-aligning sheets mean fewer longitudinal laps with resultant savings in construction time and costs.

Wider, but so light one man can handle it, Airtherm Roof Deck speeds construction time . . . cuts construction costs

Airtherm Decking provides a strong, safe and durable steel roof in flat, pitched or arched construction. It has been proved in installations as side walls, partitions, canopies, and as a sub-base for concrete or aggregate flooring. This versatility, plus its attractive appearance, has led to many unique applications in a wide range of structures.

18-GAUGE AIRTHERM ROOF DECK	PROPERTIES
Section Modulus (in.) 3	.220
Moment of Inertia (in.) 4	.263
Resisting Moment (in lbs.)	3960

To care for all contingencies relative to geographical areas and various purlin spacing, Airtherm Decking is also manufactured in No. 22 Gauge and No. 20 Gauge metal thicknesses.

FABRICATED PRODUCTS DIVISION

Airtherm MANUFACTURING COMPANY

785 South Spring Avenue
St. Louis 10, Missouri

see our catalog in S or write for copy

For more complete information consult our catalog in Sweet's 2dAi, or write . . .

Member: Metal Roof Deck Technical Institute

BOOKS

North Carolina, SP No. 310 ($.45); Utah, SP No. 311 ($.65); South Dakota, SP No. 312 ($.65). Copies can be obtained from the Superintendent of Documents, Washington 25, D. C. for the price indicated. Plane Coordinate Projection Tables also can be obtained from the same source as follows: Michigan, SP No. 313 ($.25) and Rhode Island, SP No. 315 ($.15).

Recommended Practice for Snow Removal and Treatment of Jay Pavements—Third Revision No. 9-3R Current Road Problems. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $.30.

The "Target Estimate" Contract, with Special Reference to the Wemmershoek Dam—Obtainable from S. S. Morris, City Engineer, Cape Town, South Africa.

Professional Income of Engineers: 1953—Engineers Joint Council, 33 West 39th St., New York 18, N. Y. $2.00 ($1.00 to members of constituent societies).

Experiment in Extension Programs For County Highway Engineers—Bulletin 85, Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $.30.

Porcelain Enamel in the Building Industry—Research Conference Report No. 6, The Building Research Institute, 2101 Constitution Ave., Washington 25, D. C. $6.00.

Developed and Potential Water Power of the United States and Other Countries of the World—Geological Survey Circular 329. Obtainable from the Director, U. S. Geological Survey, Washington 25, D. C.

Aerodynamic Stability of Suspension Bridges—Part IV, Model, Investigations Which Influenced The Design of the New Tacoma Narrows Bridge. Bulletin No. 116, University of Washington Engineering Station, Seattle, Wash.

Review of Past and Current Work on Electro-Osmotic Stabilization of Soils—Harvard Soil Mechanics Series, No. 45. Pierce Hall, Harvard University, Cambridge, Mass, $0.50.

Stability Analysis of Slopes with Dimensionless Parameter—No. 46, Harvard Soil Mechanics Series, No. 46. Harvard Soil Mechanics Series. Pierce Hall, Harvard University, Cambridge, Mass. $3.00.

Selected Bibliography on Building Construction and Maintenance—Building Materials and Structures Reports 140, Superintendent of Documents, Washington 25, D. C. $0.30

GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling

on Pennsylvania Highway Project

Hempt Brothers, Camp Hill, Pa., are making rapid progress on the relocation of Pa. Route 126 in Fulton County. The project involves 1,250,000 cubic yards of Class 1 excavation, the construction of three large viaducts, 40,000 feet of tile underdrains, and 86,000 tons of crushed stone base. The equipment shown here is operated by M. H. Bigan Company of Windber, Pa., which has the subcontract for 550,000 cubic yards of excavation. At the left is Mr. M. H. Bigan, owner of the M. H. Bigan Company, on the right is Mr. J. S. Buchanan, Gulf Sales Engineer.

THERE are three solid reasons why it pays to specify the products identified by the familiar orange disc. One is the all-round smoother equipment performance and fewer mechanical delays that result from better lubrication with Gulf quality oils and greases.

Another is the expert engineering counsel that Gulf provides to insure the use of the most suitable lubricants and fuels for every unit of equipment and operating condition.

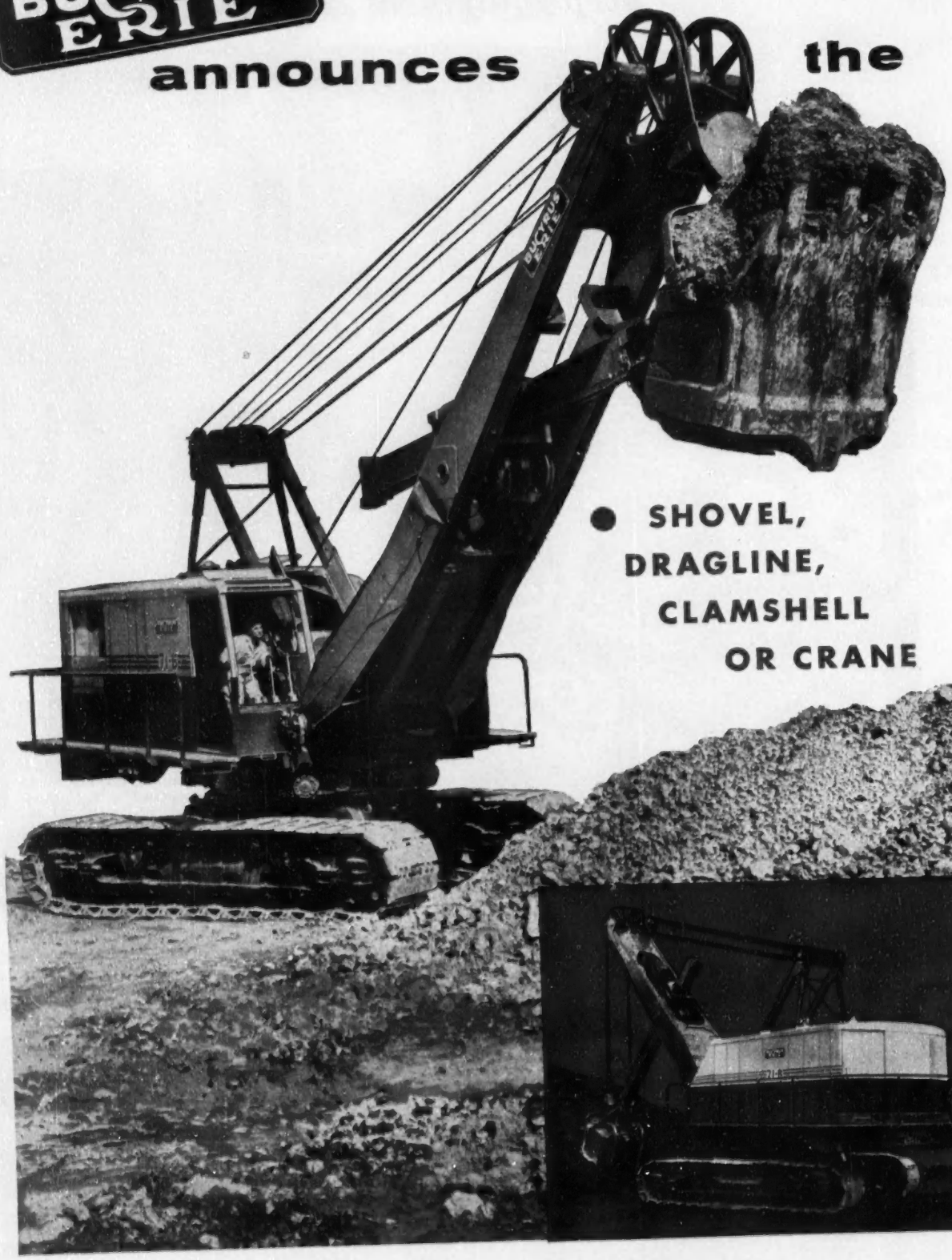
Third—and often mighty important—is Gulf's prompt delivery service through more than 1200 conveniently located warehouses in 30 states from Maine to New Mexico.

Let us discuss with you how Gulf products and services can help you on your next job. Gulf Oil Corporation · Gulf Refining Company. Gulf Building, Pittsburgh 30, Pa.

GULF

BUCYRUS ERIE

announces the



- SHOVEL,
- DRAGLINE,
- CLAMSHELL
- OR CRANE

new 3-yard 71-B

To meet the demand for a convertible 3-yd. excavator capable of high-speed, high-output performance, Bucyrus-Erie has developed the new 71-B. Designed from the ground up as a completely new machine, it has outstanding features that have been field-proved on other Bucyrus-Eries through thousands of machine-years of service.

- POSITIVE TWIN-ROPE CROWD
- RECTANGULAR INSIDE DIPPER HANDLE
- STRONG LIGHT BOOM
- FULLY INDEPENDENT BOOM HOIST
- CHOICE OF FOUR A-FRAMES
- ALL-PURPOSE HEAVY DUTY DIPPER
- FULL AIR CONTROL (not just air assist) except for drum brakes and swing and propel clutches.
- TORQUE CONVERTER DRIVE (also available without torque converter)
- ONE-PIECE CAST STEEL REVOLVING FRAME
- 12 CONICAL HOOK ROLLERS
- DOUBLE FLANGE ROLLER PATH
- ROTATABLE SWING RACK GEAR
- FOUR OPTIONAL CRAWLER MOUNTINGS
- FRICTION STEERING CLUTCHES AND DIGGING BRAKES spring set and air released.

These and other features give the new 71-B a balanced and rapid work cycle for continuous high output, along with the durability for sustained operation and long life. For more information on this outstanding new excavator see your nearby distributor.

65E54C

BUCYRUS-ERIE COMPANY SOUTH MILWAUKEE WISCONSIN

BUCYRUS ERIE

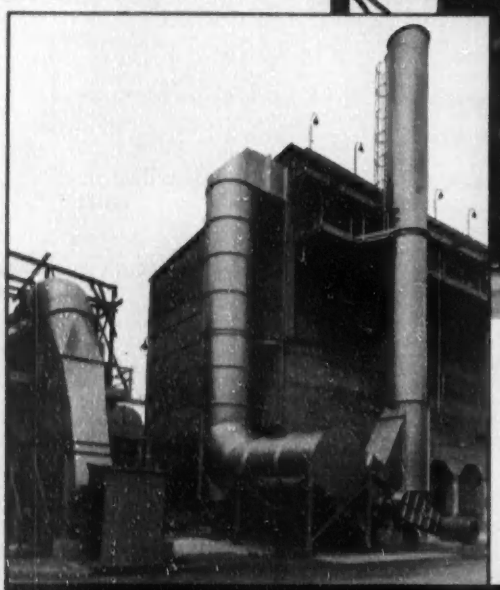
⅜- to 4-cu. yd. gasoline, diesel, and single-motor electric . . .

INDIVIDUAL DESIGN . . . for each model in the line

Shovels, Draglines, Cranes, Clamshells, Dragshovels.

Experienced Engineering Skill is Our Product

It is not just the doing of a job sometime . . . or doing it some way that counts. It is doing a given job, no matter how difficult, on schedule and doing it *right* that cuts corners on cost. The two basic manufacturing requirements for such performance are wide experience and proper equipment . . . exactly the qualifications McDonough's engineering skill embraces. For breeching or ducts, tanks, hoppers, stacks or any steel fabricating project, you can best place your confidence in McDonough.



Send today for the pictorial booklet showing many of the products we have manufactured as well as our complete plant facilities. No obligation, of course.

Mc Donough Steel Co.

Founded January 1st 1924

ENGINEERS—FABRICATED STEEL PRODUCTS

800 - 75th AVENUE OAKLAND 21, CALIFORNIA TRINIDAD 2-3300

LEGAL

Waiver of right to arbitrate disputes

A plastering contractor brought an action to recover damages for breach of contract and obtained a recovery. The owner appealed from the judgment contending that the "General Conditions" of the form of contract of the American Institute of Architects, which was used, provided that all disputes should be referred to the architect for his determination and that this was in substance an agreement to arbitrate all disputes. The judgment was affirmed on appeal,[1] the appellate court holding that the contract provision referred to did not give the architect the right to determine whether there had been a breach of the contract.

The appellate court also held that even though the contract made the architect the aritrator of any disputes that might arise out of the contract, the owner waived such right by not insisting upon an arbitration of the dispute and by not applying for a stay of the pending action. The court also held that the interposition of a counterclaim for damages and proceeding to examine the contractor before trial in the action constituted a waiver of the right to have the matter settled by arbitration.

The appellate court further held that the provisions of the contract to the effect that the "claims of the Owner or Contractor" which the architect was authorized to determine under Article 39 of the "General Conditions", must be construed in view of other provisions of those conditions to refer only to claims "relating to the execution and progress of the work" and not to claims arising out of alleged breach of contract. See Young v. Crescent Development Co., 240 N.Y. 244, 148 N.E. 510.

(1) Gold Plastering Co. v. 200 East End Avenue Corp., 126 N. Y. S. 2 d 836, 282 App. Div. 1073, New York Supreme Court, Appellate Division, Dec. 30, 1953.

Contractor not responsible for effect of bad design

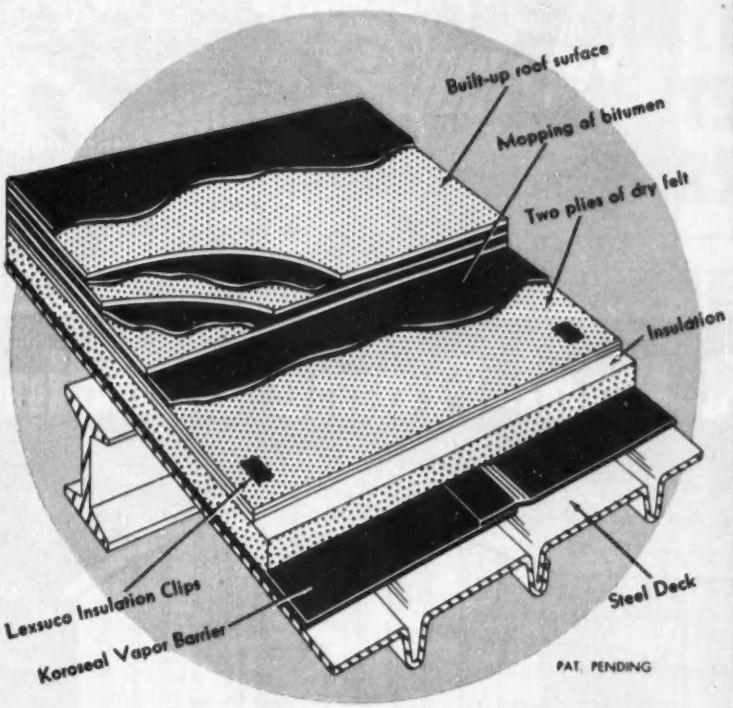
The owner of a house brought an action against the contractor to recover damages resulting from alleged faulty construction of the foundations of the house.

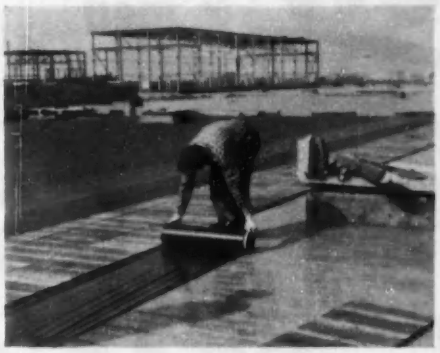
At the trial, the contractor claimed, and the court held, that the evidence sustained the contractor's contention that the foundations had been built properly and that the cracks that de-

(*Continued on page 111*)

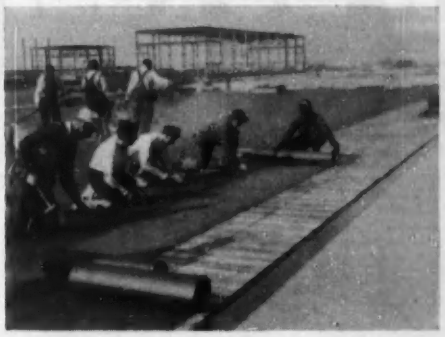
LEXSUCO *Engineered Products for the Construction Industry*

LEXSUCO ROOF CONSTRUCTION





Fire-retardant vapor barrier of Koroseal flexible material is installed on roof of large Ohio factory. This avoids placing inflammable materials on steel deck where they become a hazard in case of plant fire.



Insulation goes over Koroseal, then two piles of dry roofing felt. These materials are fastened mechanically by positive-locking Lexsuco Insulation Clips driven thru steel deck.

Final step is application of standard 4-ply built-up tar and gravel roof. Lexsuco Roof Construction was installed on this 500,000 sq. ft. roof at cost comparable to conventional roofing.

Koroseal® VAPOR BARRIER ASSURES NEW FIRE SAFETY FOR AUTO PLANT

LEXSUCO's new fire-retardant roof design has been recently installed on the new 11½-acre Ohio plant of a major automotive manufacturer. This "new look" in roofing provides increased fire safety—at no extra cost!

Improved fire protection results from the use of a specially compounded, non-inflammable Koroseal Vapor Barrier having a minimum life expectancy of 20 years. Easy to install in a single-ply, 4-mil thickness, the Koroseal replaces hazardous conventional materials. As shown in the diagram, the Koroseal and insulation are not hot mopped to the steel deck, but are securely pinned with LEXSUCO Insulation Clips. A standard built-up roof is applied over this base.

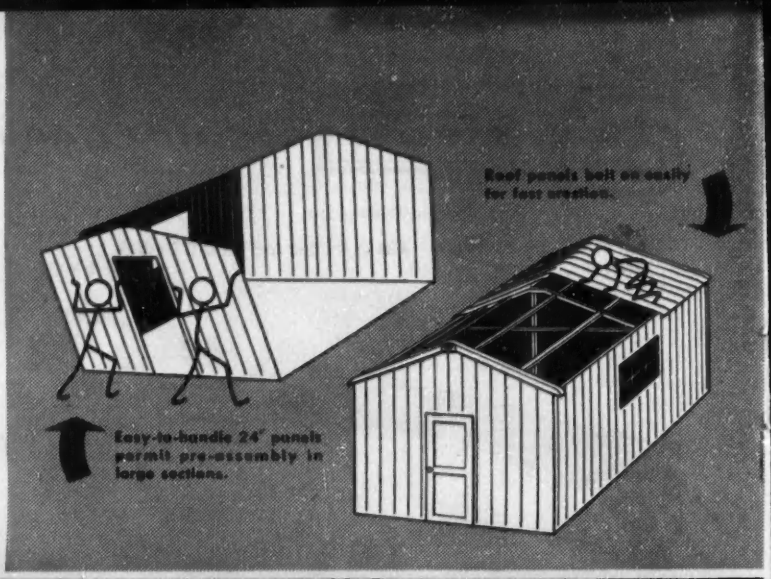
This LEXSUCO ROOF CONSTRUCTION eliminates all burnables in the vulnerable area between roof deck and insulation. Thus, no combustible materials can drop into a plant fire below. Other LEXSUCO roof designs with and without a vapor barrier are applicable to all type roof decks for fire resistance proved superior in full-scale fire tests.

Specify the fire-retarding LEXSUCO ROOF CONSTRUCTION—it can be installed at a cost no greater than that of standard roof designs! For further information or a complete "Technical Report", write: *Lexsuco, Incorporated, 4817 Lexington Ave., Cleveland 3, O.*

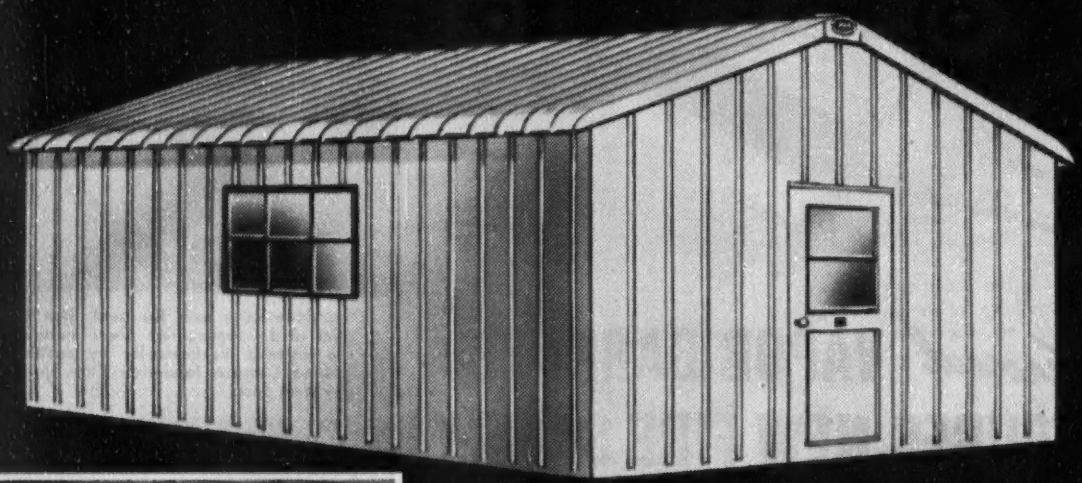
*T. M. Reg. B. F. Goodrich Co.

LEXSUCO
INCORPORATED

NOW 2 men put it up with a wrench ...in hours



NEW BUTLER Panl-Frame Building



New steel framework with all-bolted construction gives you fast assembly, plus long life.

Here's a new steel utility building that's a budget planner's dream!

With Butler panelized construction, wall panels can be quickly and easily pre-assembled into large sections and tilted into place on any type foundation. A wrench and screw driver are the only tools needed. Unskilled workers can easily do the job.

Roof panels go up just as easily by simply bolting them to steel frame and eave channels. In hours, instead of days . . . and at minimum erection cost . . . a Butler Panl-Frame building is up and ready for use.

And the uses are unlimited—for field houses, bulk plants, supply depots, pump houses, electric power stations, garages . . . for every utility need. Sizes from 6′ to 24′ widths . . . 8′ or 10′ high sidewalls . . . in any lengths desired by adding extra sections.

In new Butler Panl-Frame buildings, you get built-in quality and construction features that have made Butler steel buildings best sellers the world over. Carefully engineered framework gives you maximum strength per pound of steel. Butler galvanized, high-rib panels add extra strength . . . provide permanent, weather-tight, fire-safe shelter.

Compare Butler Panl-Frame building prices and erection costs with those of conventional buildings. Learn how you can stretch your building budget. See your Butler dealer or write for free folder.

For prompt reply, address office nearest you:

BUTLER MANUFACTURING COMPANY,
7418 East 13th Street, Kansas City 26, Missouri
918 Sixth Avenue, S.E., Minneapolis 14, Minnesota
1028 Avenue W, Ensley, Birmingham 8, Alabama
Dept. 18, Richmond, California

Please send me name of my nearest Butler dealer—also your free folder on new Butler Panl-Frame steel buildings.

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

BUTLER STEEL PRODUCTS

BUTLER MANUFACTURING COMPANY

Manufacturers of Oil Equipment • Steel Buildings • Farm Equipment
Dry Cleaners Equipment • Special Products

Factories located at Kansas City, Mo. • Minneapolis, Minn. • Galesburg, Ill.
Richmond, Calif. • Birmingham, Ala.

veloped therein, which was the subject matter of the litigation, resulted from bad architectural design. Under such circumstances, the court held that the contractor was not liable for correcting the defects in the building.[1]

(1) Toca et ux. v. Thompson & Whitty, Inc., et al., 69 So. 2d 364, Supreme Court of Louisiana, Dec. 14, 1953.

Interpretation of contracts

The Bethlehem Steel Co. entered into a contract with the Turner Construction Co., whereby the former was to furnish, erect and paint all the structural steel that would be needed for a new building. The contract contained an escalator clause providing for an increase in the contract price in the event that there should be increases in the prices of "component materials, labor rates applicable to the fabrication and erection thereof and freight rates" in effect as of the date of the contract.

Bethlehem Steel Co. increased the price of steel after the contract date, although the price increase was in fact announced before the contract was executed. Bethlehem billed the Turner Co. for such increased prices as well as other increases permitted by the escalator clause.

The Turner Co. challenged the validity of the extra charge, in so far as it related to an increase in the cost of steel, contending that it was never intended that Bethlehem could increase the contract price by increasing the price of steel—material that it was to furnish itself. The Turner Co. also contended that by "component materials," an increase in the cost of which would justify an increase in the contract price, the parties to the contract meant only such materials as entered into the manufacture and cost of the steel and not of the steel itself.

The Bethlehem Steel Co., on the other hand, contended that the clear meaning of the language used in its context is that by "component materials," the parties meant steel, paint and the like materials entering into the fabrication and erection of the steel on the job, rather than the materials that went into the manufacture of the steel.

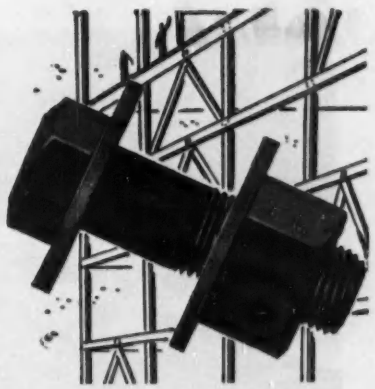
The trial court sustained the contention of the Turner Co., but this determination was reversed by the appellate court, the latter court sustaining the contention of the Bethlehem Steel Co.[1]

(1) Bethlehem Steel Co. v. Turner Construction Co., 126 N.Y.S. 2d 147, 283 App. Div. 69, Supreme Court, Appellate Division, New York, Dec. 8, 1953.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

Because...

NO BOLT is ANY BETTER THAN ITS WASHERS



It pays to Specify **MIL-CARB*** *TRADE MARK CARBURIZED **WASHERS**

for STRUCTURAL STEEL FRAMING

Today the swing in field assembly of structural steel joints is definitely toward *High Strength Bolting*. According to competent authorities who have had practical experience with this form of construction and evaluated its benefits, it is possible to *build better* and *build faster* by employing this method of joining steel members.

A primary essential, of course, is to use heat-treated, quenched and tempered bolts to produce a minimum ultimate strength of 120,000 psi for the usual size of bolt. At the same time, nuts must meet a proof load equivalent to the ultimate load of the bolts . . . *and the washers must be hardened, special quality steel.*

And because no bolt assembly is any better than its washers, consistent high-strength bolting should include the use of MIL-CARB Carburized Washers.

MIL-CARB Carburized Washers are fabricated from Prime Carburizing Quality Special Soundness Steel, which insures uniform quality control, always equal to the rigid specifications for this form of steel assembly (ASTM Designation A325, applying to bolts, nuts and washers).

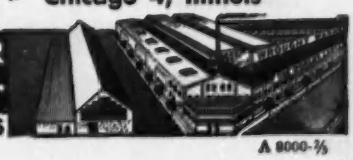
Additionally, MIL-CARB Washers overcome inherent weaknesses often present in heat-treated washers fabricated from steel of questionable quality.

For uniformly sound construction specify MIL-CARB Carburized Washers

Distributed by Leading Bolt Manufacturers and

U. S. STEEL SUPPLY DIVISION
United States Steel Corporation
208 South La Salle Street • Chicago 4, Illinois

WROUGHT WASHER MANUFACTURING CO.
The World's Largest Producer of Washers
2224 S. BAY ST., MILWAUKEE 7, WIS



A 8000-⅞

Jaeger 125's on pipeline job

do 30% more work with the same tools*

To speed the laying of pipeline in this busy boulevard, a pair of Jaeger 125's were used in place of obsolete 105 ft. compressors to do the job 30% faster.

This capacity to get more work out of today's heavy air tools has made the "125" the most popular of all compressor sizes. Jaeger established this 125 rating 6 years ago and guarantees to deliver this volume at the lowest cost per cu. ft. of air of any portable air compressor on the market.

Now, when cost-savings are so important, talk to your Jaeger distributor. He has no obsolete size machines to sell you. He can save you money on air and air tool operation.

* Each 125 had the air volume needed to hold 2 heavy duty breakers at full pressure operation, hitting up to 1600 times a minute with a heavier impact of 55 to 60 foot pounds in every blow. With that 10 lbs. heavier impact, and 200 to 300 additional blows per minute, the same air tools easily averaged a third more work.

Jaeger Standards:	**75**	**125**	**185**	**250**	**365**	**600**
Old Standards:	60	105	160	210	315	500

For full information, ask for Catalog JC-1

THE JAEGER MACHINE COMPANY

200 Dublin Avenue, Columbus 16, Ohio

PUMPS • CONCRETE MIXERS • TRUCK MIXERS • LOADERS • PAVING MACHINES

OBITUARIES

L. A. Paddock, 75, president, American Bridge Co., from 1931 to 1946, died July 27 in Pittsburgh, Pa. Before joining American Bridge as a vice president in 1927, Paddock had been associated with the Canadian Bridge Co., starting as a draftsman in 1904 and rising to the presidency in 1924. Both companies were subsidiaries of the U. S. Steel Corp., and now form part of its steel fabrication division.

Walter B. Hollingworth, 53, city engineer of Vernon, Calif., since 1950, died July 17 in Santa Monica. He started his city service in 1938 as an assistant city engineer.

Robert M. Miller, 66, head of Robert M. Miller Construction Co., Ltd., Montreal, died July 6. Before entering the Canadian construction business, he worked on numerous large projects in the western U. S.

Herbert E. Fort, 39, Jacksonville, Fla., building contractor, was killed July 22 in an automobile accident. He was president of Herbert E. Fort Co. and Brownett Building Co.

Harry Sherman, 65, business agent of the AFL Construction and General Laborers Union No. 185, Sacramento, Calif., died July 16. For many years a labor leader in northern California, he was serving as president of the Northern District Council of Laborers at the time of his death.

Cleve H. Howell, 73, retired Bureau of Reclamation engineer, died July 22 in Longmont, Colo. As supervising engineer of the Big Thompson water diversion project in its early stages, he was in charge of completing the Adams Tunnel Bore through the Continental Divide above Estes Park.

Fred W. Chase, Jr., 54, district project engineer in Essex and Suffolk Counties for the Massachusetts Department of Public Works, died in Boston July 25. He had been with the department since graduation from Northeastern University in 1924.

Emanuel Yoss, 61, for 17 years chief engineer for the United States Tobacco Co., died July 20 in Richmond, Va.

Emery Oliver, 91, veteran western engineer, died in Sacramento July 26. His engineering career began in 1885 with the Portland City Water Co.

(*Continued on page 114*)

The Non-Metallic Woven Tape that resists abrasion, moisture and hard use longest

LUFKIN HI-LINE

The new Lufkin Hi-Line is designed in every way for longest wear. The tough new miracle synthetic fibres used in the line are dimensionally stable — even after repeated soakings. A specially compounded plastic coating that resists abrasion, cracking, mildew, moisture and temperature changes protects the bold, easy-to-read markings. The case is of hand-stitched genuine leather, which lasts longer according to field tests.

287

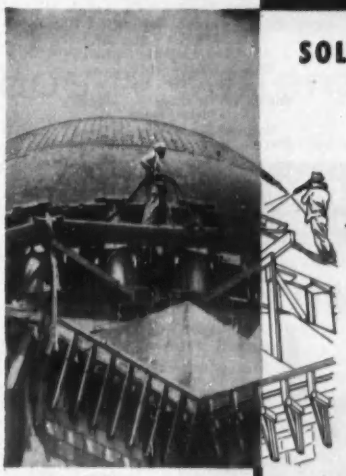
BUY LUFKIN

TAPES • RULES • PRECISION TOOLS
FROM YOUR SUPPLY HOUSE

THE LUFKIN RULE COMPANY
SAGINAW, MICHIGAN
132-138 Lafayette St.
New York City • Barrie, Ont.

"GUNITE"

SOLVES STRUCTURAL PROBLEMS



Tough, versatile, durable for difficult construction and restoration. "GUNITE" —pneumatically applied sand and cement —is placed direct, conforms to any shape specified. Get "GUNITE"—the most practical construction material since 1912—adapted to your toughest problems by "GUNITE" Associates, Inc.

"GUNITE" ASSOCIATES, INC.

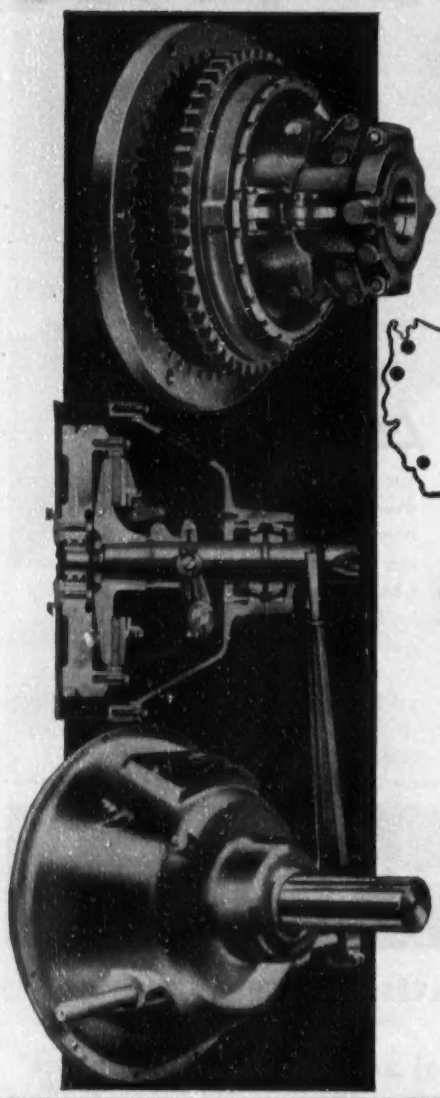
GUARANTEED PERFORMANCE THROUGHOUT THE SOUTH

Miami, Florida
7541 N.E. 3rd Place

Atlanta, Georgia
1013 Boulder crest Dr., S.E.

Affiliate of BAILEY-LEWIS-WILLIAMS

ROCKFORD Heavy Duty CLUTCHES and Power Take-Offs Are Distributed Coast to Coast



Wherever industry uses heavy duty clutches or power take-offs there is a ROCKFORD distributor conveniently close at hand to supply ROCKFORD Heavy Duty CLUTCHES, POWER TAKE-OFFS and replacement PARTS for numerous types and sizes of each.

These ROCKFORD DISTRIBUTORS and DEALERS carry a stock of clutches, power take-offs and replacement parts to insure ROCKFORD clutch users prompt delivery and service.

Continental Sales & Service Company, Los Angeles, Calif.
Lightbourn Equipment Company, Dallas, Texas
Atlas Auto Parts & Grinding Co., Louisville, Kentucky
Wepco Equipment Company, Cleveland, Ohio
Genuine Motor Parts, Pittsburg, Pa.
Auto Clutch & Parts Company, Chicago, Illinois
Auto Gear & Parts Company, Philadelphia, Pa.
General Machine Parts, New York, N. Y.
Highway & Industrial Equipment Co., Inc. Raleigh, N. Carolina
R. Angus (Alberta) Ltd., Edmonton, Alberta, Canada
Maass Equipment Co., Ltd. Montreal, Canada
B-W-H Service Parts, Ltd., Merritton, Ontario, Canada
Cradle Equipment Company Utica, New York
Engine Service & Supply Company Odessa, Texas
National Supply Engine Corp. Portland, Ore. and Seattle, Wash.

ROCKFORD CLUTCH DIVISION BORG-WARNER
313 Catherine Street, Rockford, Illinois, U.S.A.

the most versatile hand level you can own . . .

LEUPOLD ABNEY LEVEL

Milled slide holds 3 interchangeable scales:

per cent	topographic
degrees	chainage corrections

Convenience-engineered design permits immediate use of any scale without removing and reversing arc frame. *Controlled* motion of index arm makes easier and more accurate readings. *Internal* focus on bubble.

Overall length . . . 6½"
Radius of arc . . . . 1¾"
Complete with saddle leather case with belt loop.
Choice of any 3 scales, $30.00

Write for information on the complete line of LEUPOLD levels.
precision engineering instruments since 1907
LEUPOLD & STEVENS INSTRUMENTS, Inc.
4445 N. E. GLISAN STREET • PORTLAND 13, OREGON

OBITUARIES

Then—for 18 years—he located and built railroads and bridges for the Oregon-Washington Railroad & Navigation Co., the Union Pacific and Western Pacific Railroads. From 1910 until retirement in 1929 he served first as chief engineer and later as general manager of Natomas Co.

Fred P. Flynt, 53, superintendent of construction for the R. J. Reynolds Tobacco Co., Winston-Salem, N. C., died July 27.

Arthur R. McGinness, 70, regional engineer in the Bureau of Reclamation's Sacramento office from 1936 to 1953, died July 26. He started his Bureau career after graduation from Colorado Agricultural College, working on projects in Nebraska and Montana. Before joining the Sacramento office, he served as an engineer for Long Beach, Calif., and for the bridge department of California's State Division of Highways.

Louis J. Baron, 67, a 40-year veteran of the New York State Highway Department, died July 17 in Watertown, N. Y. He served as an assistant civil engineer.

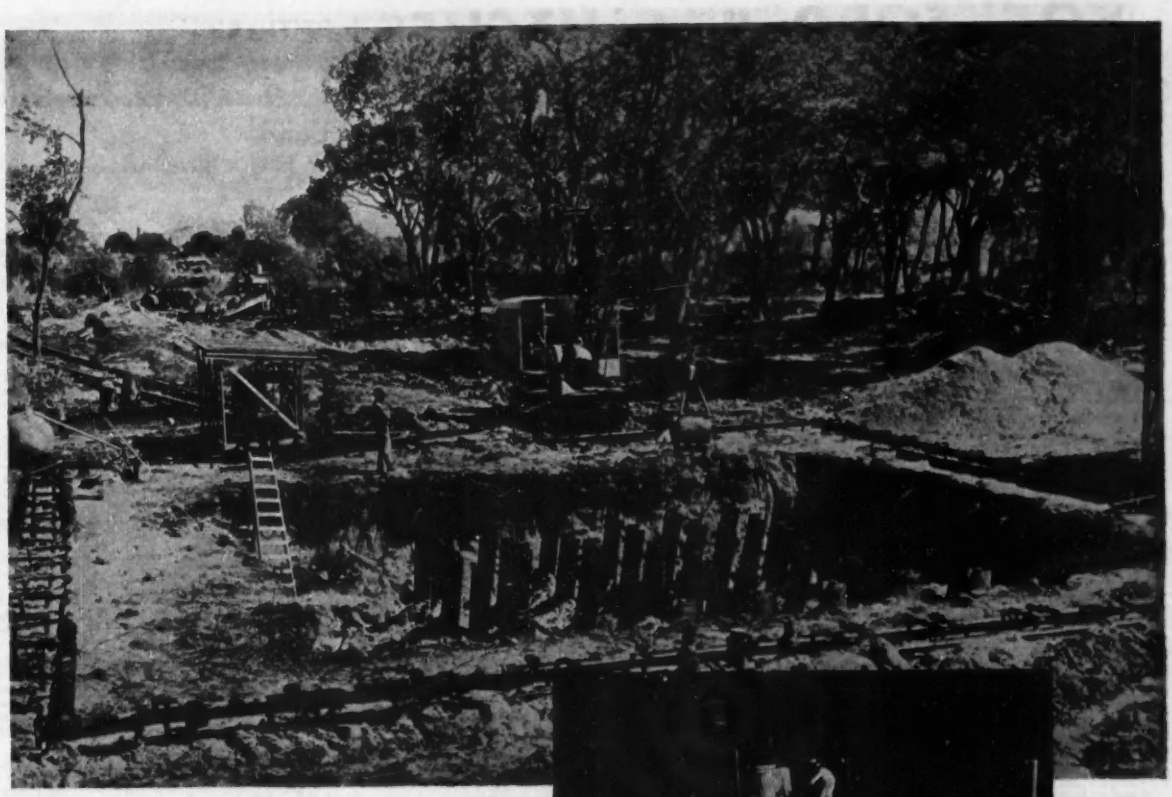
Lavern R. Bennett, 65, partner in the Dearborn, Mich., architectural and engineering firm of Bennett & Straight, died July 24 at Alpena, Mich.

Col. Frederic F. Frech, 62, a 35-year veteran of the Corps of Engineers and former division engineer for the North Atlantic Division, Governors Island, N. Y., died July 16 at Princeton, N. J. During World War II he was Air Force engineer under the commander-in-chief, Allied Expeditionary Air Forces, and also Air Force engineer for SHAEF. From 1945 to 1949 he was district engineer in Philadelphia. He retired in 1952 to establish a consulting engineer practice in Princeton.

Charles H. Flynn, 65, general contractor of Niagara Falls, Ont., died July 28.

Charles E. Swartz, 85, former New York Central System civil engineer, died July 29 in Toledo, O. He was associated with the railroad nearly 50 years before retirement.

Horace B. Engle, 71, Springfield, Pa., former assistant chief engineer of the Chesapeake & Potomac Telephone Co., died July 9. He had been with the company for 48 years before retirement in 1948.



STANG unwatering eliminates costly cofferdam ...speeds completion!

Near Belen, New Mexico, a deep stratum of fine, water-bearing sand posed a problem for contractor building anchor pier for suspension bridge carrying pipeline over the Rio Grande. After consulting with Stang engineers, an efficient wellpoint system was installed. Then work progressed safely without delay ... and *without necessity of a cofferdam of any kind.* Excavation is shown under way after 100 ft. bearing piles were driven. Insert photo shows concreting operation, which was continuous for 36 hours. Unwatering by Stang eliminated danger from uplift, "boils," or sloughing. Call on Stang experience and equipment to solve *your* water handling problem — any size, any type, anywhere. 100-page catalog furnished free upon request.

JOHN W. **STANG** CORPORATION

Engineers and Manufacturers of Unwatering Equipment
Wellpoint and Pumping Systems
Unwatering Planning — Equipment Service

BELL, CALIFORNIA	OMAHA, NEBRASKA	TACOMA, WASHINGTON	NEW YORK, N. Y.
8221 Atlantic Avenue	2123 South 56th Street	2339 Lincoln Avenue	No. 2 Broadway
Telephone: LOgan 5-7431	Telephone: WAlnut 7796	Telephone: BRoadway 4062	Telephone: WHitehall 3-0365

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Mass., Falmouth**—HEATING PLANT—BA On Or About 9/17—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, central heating plant, Otis Air Force Base, ENG-19-016-55-12, est. between $250,000-$500,000. CD 5/7/54.

BIDS ASKED—BUILDINGS

▲ **R. I., Newport**—HIGH SCHOOL—BA 9/9—City, H. S. Comn., Office Supt. Schools, City Hall, Rogers High School off Ruggles Ave. $2,200,000. Plans deposit $100. Kelly & Gruzen, 73 Tremont St., Boston, Mass. archts. C. W. Riva Co., 511 Westminster St., Providence, structural engr. CD 4/7.

SOON LETS CONTRACT—BUILDINGS

▲ **Me., South Paris**—TANNERY—A. C. Lawrence Leather Co., Div. Swift & Co., Union Stockyards, Chicago, Ill., soon lets contract, tannery, $1,200,000. Ward & Bolles, 215 Leidesdorff St., San Francisco, Calif., archts., Alonzo J. Harriman, 282 Court St., Auburn, assoc. archt. CD 7/20.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MAINE—State Hy. Comn., State House, Augusta, **The Bridge Constr. Corp.**, Augusta, Me. LB **$629,347.** bit. conc. road 5.057 mi. F. A. Secondary Proj. S 0326 (6), Mapleton and Castle Hill. Bids Aug. 4.

† **J. W. Praught & Co.**, 1803 Dorchester Ave., Dorchester, Mass. CA **$898,400.** est. $1,000,000. heating plant addns., Naval Air Station, Spec. 38327, BRUNSWICK, ME. First Naval Dist., 495 Summer St., Boston, Mass. CD 7/20, under LB.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, **Phoenix Bridge Co.**, Phoenixville, Pa. LB **$949,800.** est. $1,200,000. bridge constr. steel superstructure, Chicopee. Bids Aug. 3. CD 7/2.

▲† **Wexler Constr. Co.**, 118 Needham St., Newton Highlands, Mass. LB **$510,554**, Lot A; **$597,143**, Lot B; est. $1,000,000-$2,000,000. special AAA facilities, 4 sites, Reading and Nahant, MASSACHUSETTS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Leon Chatelain Jr., 1632 K St. N.W., Wash., D. C., archt. Bids Aug. 3. CD 7/20.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
V. Barletta Co., 10 Whipple Ave., Roslindale, Mass. CA **$2,213,276.** est. $2,970,000. Contr. 2 railroad grade crossing elimination Lincoln Square, Worcester. Singstad & Baillie, 24 State St., New York, N. Y., engrs. CD 7/30, under LB.

† **Hadley Constr. Co.**, 51 Sagamore Ave., West Medford, Mass. LB **$730,224.** est. $800,000. state air terminal complex, relocation of bldgs., to complex, AF 19-604-55-5, BEDFORD, MASS. Air Force Cambridge Research Center, Air Research & Development Command, 224 Albany St., Cambridge, Mass. CD 7/27.

Salah & Pecci Constr. Co., 119 Longwood Ave., Brookline, Mass. LB **$743,447**, est. $750,000. Sect. 134 Contr. 219, Framingam trunk sewer (interceptor) South Metropolitan System, Framingham, pumping station to Natick pumping station, Natick and Framingham, BOSTON, MASS. Commonwealth of Mass., Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., Boston, Mass. Bids Aug. 5. CD 7/21.

BUILDINGS

LOW BIDS AND CONTRACTS

Daniel O'Connell's Sons, Inc., 480 Hampden St., Holyoke, Mass. CA est. **$800,000.** SHOPPING CENTER South, Elm and Davis Sts., HOLYOKE, MASS. Frank H. Cataldo, 27 Cherry St., Holyoke, Mass. Fred H. Franz, 70 Nonotuck St., Holyoke, Mass., archt. CD 1/13/54.

Agostini Constr. Co., 110 Meadow St., Pawtucket, R. I. LB **$586,990.** est. $700,000. high SCHOOL adjacent elementary school, NORTON, MASS. Town, Lawrence Nurse, supt. schools, Norton, Mass. Bids Aug. 6. CD 7/7.

Homecraft Builders, Inc., 102 Hano St., Allston, Mass. Owner Builds. est. **$700,000.** RESIDENTIAL DEVELOPMENT, South Norwood, NORWOOD, MASS. CD 8/9.

▲ **Gilbane Building Co.**, 90 Calverly St., Providence, R. I. CA Est. **$1,500,000.** SHOPPING CENTER incl. 24 units, 177,000 sq. ft. shopping area, parking, "Coltsville" on Rtes. 8 and 9, PITTSFIELD, MASS. Joseph A. Powers, 156 Benedict Rd., Pittsfield, Mass. Ernest F. Carlson, Inc., 1694 Main St., Springfield, Mass., engr. Sears Roebuck Co., 210 Brookline Ave., Boston, Mass., lessee. CD 4/8/53.

▲ **I. R. Stich Assoc.**, 97 Federal St., West Hartford, Conn., Owner Builds. **$2,000,000.** 170 new RESIDENCES, Enfield Acres, ENFIELD, CONN.

Lorello & Naccarato, 3 East Main St., Mystic Conn., CA **$711,500**, junior high SCHOOL, Brandegee Ave., GROTON, CONN. Town, c/o Supt. Schools, Groton, Conn. Bids July 28. CD 8/4, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲ **N. Y., Brooklyn**—AQUARIUM—BA 8/24—Comr. Parks, at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, Zone 21, Item 1, Contr. No. B-80-154B, general constr.; Item 2, Contr. B-80-254B, electrical work; Item 3, Contr. No. B-80-354B, heating and ventilating; Item 4, Contr. B-80-454B, plumbing; for the constr. of Stage I, of the Aquarium, etc., south of Surf Ave. and east of W. 8th St., Coney Island. Total cost $7,000,000. Plans deposit $10, Item 1; $5 each Items 2, 3, and 4. CD 7/30/43.

NEW YORK—BA 8/25—Triborough Bridge & Tunnel Auth., Administrative Bldg., Randall's Island, New York, Zone 35,

Queens Co.—grading, drainage, paving, utilities from Cross Bay Blvd., Contr. No. CB-1, Conduit Blvd. Plans deposit $25. S. Peter Shumavon, 8 W. 45 St., New York, consult. engr. CD 10/13/52.

N. Y., Astoria—BA 8/25—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Contr. 4, structures and equipt.; Contr. 5, electrical; Contr. 6, plumbing; Contr. 7, heating and ventilating for the construction of the Bowery Bay Sewage Treatment Works Extens., Berrian Blvd. and 43 St. Plans deposit $100. Extended date. CD 7/12.

N. Y., Attica—PRISON WALLS—BA 8/26—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, reconstruct prison walls, etc. Attica Prison. Plans deposit $40.

Del., Wilmington—BA 8/31—Levy Court of New Castle Co., Public Building, 11 and King Sts., two pumping stations, Newport Pumping Station and Stockdale Pumping station, approx. 170 ft. 10 in. c.i. force main and 650 ft. 16-in. and 18-in. gravity sewer will be built in conjunction with the Newport Pumping Station and approx. 390 ft. 6-in. c.i. force main and 142 ft. 12-in. gravity sewer in conjunction with the Stockdale Pumping Station. John Taylor, county engr.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

NEW YORK—BA 9/1—Triborough Bridge & Tunnel Auth., Administrative Bldg., Randall's Island, New York, Zone 35.

Queens Co.—grade separation structure, Contr. No. HE-1, Horace Harding Expressway at Queens Blvd. Plans deposit $25. Ammann & Whitney, 76 9th Ave., New York, Zone 11, consult. engrs. CD 10/13/52.

NEW JERSEY and PENNSYLVANIA—BA 9/9—Delaware River Port Auth., Admin. Bldg., Camden, N. J.

Contract No. P-3, viaduct superstructure, Philadelphia Anchorage to Second St. for new bridge between Packer Ave., Phila., Pa. and Gloucester, N. J. Plans deposit $10. CD 9/26/52.

NEW YORK—BA 9/14—Jones Beach State Parkway Auth., Administration Headquarters, Belmont Lake State Park, Babylon.

Nassau Co.—Contr. No. 1, grade separation structure at Long Island Rail Road Main Line for the extens. of Meadowbrook State Parkway. Andrews, Clark & Buckley, 305 E. 63 St., New York, consult. engrs.

BIDS ASKED—BUILDINGS

N. Y., Brooklyn—LIBRARY—BA 8/25—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Contr. 1, general constr.; Contr. 2, plumbing; Contr. 3, heating and ventilating; Contr. 4, electric work and lighting fixtures for Coney Island Branch Library, Mermaid Ave. and northwest corner W. 19 St. Plans deposit $25. CD 2/14/45.

N. Y., Brooklyn—HEALTH CENTER—BA 8/25—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Contr. 1, general constr.; Contr. 2, plumbing; Contr. 3, heating and ventilating; Contr. 4, electrical work and lighting fixtures for constr. of Sunset Park District Health Center, 514 to 534 49 St. Plans deposit $25. CD 9/14/48.

N. Y., Syracuse—DORMITORY—BA 8/26—LeMoyne College, LeMoyne Heights, 3 story bsmnt. 123x168 ft. dormitory, Nelligan Hall, Approx. $550,000. Eggers & Higgins, 100 E. 42 St., New York, archts. Weiskopf & Pickworth, 2 W. 45 St., New York, structural engrs. CD 5/22/46.

SOON LETS CONTRACT—BUILDINGS

Md., Baltimore—SCHOOL—Our Lady of Pompei R. C. Church, Claremont and Conkling Sts., soon lets contract, masonry school, convent, assembly and rectory, $600,000. Plans deposit $35. B. F. Owens & Assoc., 213 N. Calvert St., archts. CD 10/14/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Dravo Corp., Neville Island, Pittsburgh, Pa., LB $1,913,250.** Cofferdams A and B, unwatering cofferdam area, near Massena, St. Lawrence Co., NEW YORK. The Power Authority of the State of New York, 270 Broadway, New York 7, N. Y. Bids Aug. 6. CD 7/12.

▲ **James McHugh Constr. Co.**, 6449 South Park Ave., Chicago 37, Ill., CA **$2,577,860,** water treatment plant, TONAWANDA, N. Y. Town Bd., Municipal Bldg., Kenmore, N. Y. Bids July 28. CD 6/29.

▲ **NEW JERSEY**—N. J. Hy. Auth., State Hy. Dept. Office Bldg., 1035 Parkway Ave., Trenton,
George M. Brewster & Sons, Inc., 275 W. Fort Lee Ave., Bogota, N. J., LB **$2,183,442,** Contract 182, Section 1, Garden State Parkway, grading, paving, bridges from north of State Rte. 4 to south of Circle Dr., Borough of Paramus, Bergen Co. Bids Aug. 9.

▲ **PENNSYLVANIA**—State Hy. and Bridge Auth., 506 North Office Bldg., Harrisburg,
H. T. Osburn & Co., Inc., Franklin, Pa., CA **$1,447,945.** 21,661 ft. rein.-con. pavement variable in width, two plate girder bridges, T. R. 8-62, Sugar Creek Twp., Venango Co. Bids May 28, awarded Aug. 4. CD 6/2 under LB.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,
H. J. Williams Co. Inc., York, Pa., CA **$3,334,253.** 2.96 mi. Sect. 36-A, of Northeastern Exten. in Lower Macungie, Upper Macungie and South Whitehall Twps. Lehigh Co. Bids July 14. CD 8/6, under LB.

PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
The Marshall Constr. Co., 186 S. 15 St., Harrisburg, Pa., LB **$128,415** crushed aggregate base with bit. surf. 22 ft. wide, incl. two reon.-con. box culverts, 1,794 ft., T. R. 72, Providence Twp., Lancaster Co.;
A. B. Cole, Meshoppen, Pa., LB $71,906, crushed aggregate base with bit. surf. 24 ft. wide, 3,904 ft., L. R. 5 (29), Plains-Jenkins Twps., Luzurne Co.;
Middlecreek Constr. Co., Middleburg, Pa., LB **$275,364,** 16,999 ft. crushed aggregate base with bit. surf. variable in width, incl. alterations to existing bridge, L. R. 41045 (4), City of Williamsport, Loyalsock-Hepburn Twps., Lycoming Co.;
Simon Popiel, Box 256, Portville, N. Y., LB **$147,738,** widening existing pavement with crushed aggregate base variable in width, surf. new base and existing pavement, 7,211 ft. T.R. U. S. 6, Youngsville Boro, Brokenstraw Twp., Warren Co.; Bids Aug. 6. CD 7/21.

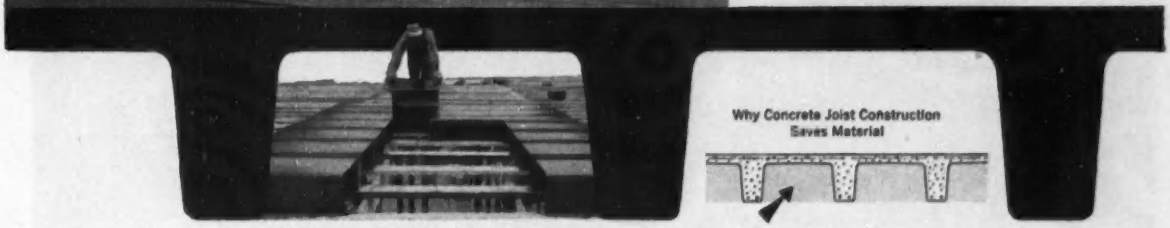
How Ceco-Meyer Steelform Construction Saved 25% on Concrete

✚ This is the story of how a Building-Realtor gained more rental income and saved on building costs. Garfield I. Kass looked at his two story building in downtown Washington, D.C. and visualized it reaching 11 more stories into the sky. That, of course, would mean more income from his building site. But a problem was posed . . . would the existing footings and columns, though designed for additional construction, carry 13 floors?

Architect James F. Hogan reasoned light loads were the answer, so he considered several floor framing methods to find as light a construction as possible. The spans were long—33 feet—and of all designs investigated Ceco-Meyer Steelform construction proved to be lightest. Why? Because 25% less concrete was required than for any other method. Ceco-Meyer Steelform construction is strong and rigid, yet light in weight—for all non-working concrete is eliminated.

Ceco Product Specialists can help you save through product engineering. So before you plan your next project, call on Ceco. Consult Sweet's File for address. (CECO)

CECO STEEL PRODUCTS CORPORATION
Offices, warehouses and fabricating plants in principal cities.
General Offices: 5601 West 26th Street, Chicago 50, Illinois



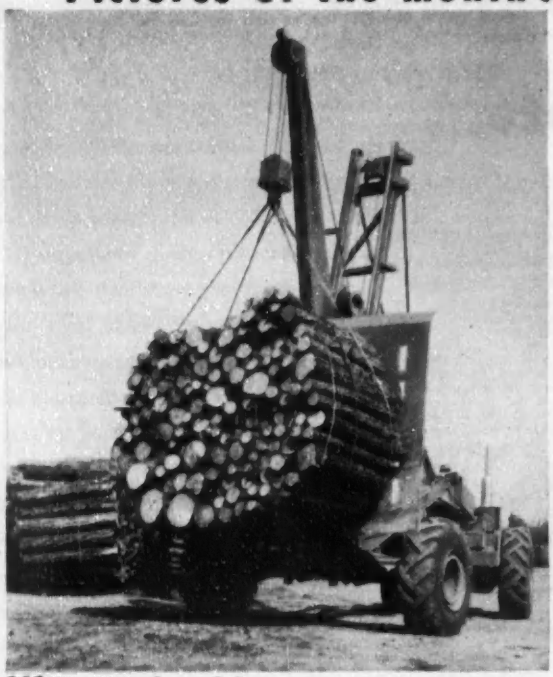
Steelforms are quickly installed on open wood centering. Cost is reduced because same lumber and Steelforms are re-used from floor to floor.

Shaded portions show concrete eliminated by concrete joist construction.

CECO—AMERICA'S WIDEST LINE OF STEEL & ALUMINUM WINDOWS

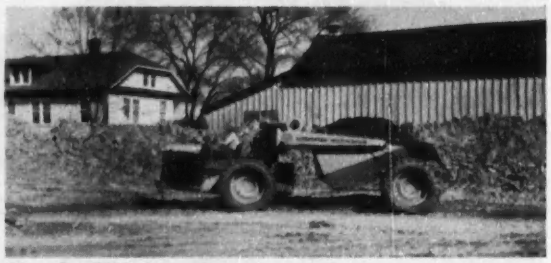
(Advertisement)

Pictures of the month . . . by LeTourneau-Westinghouse

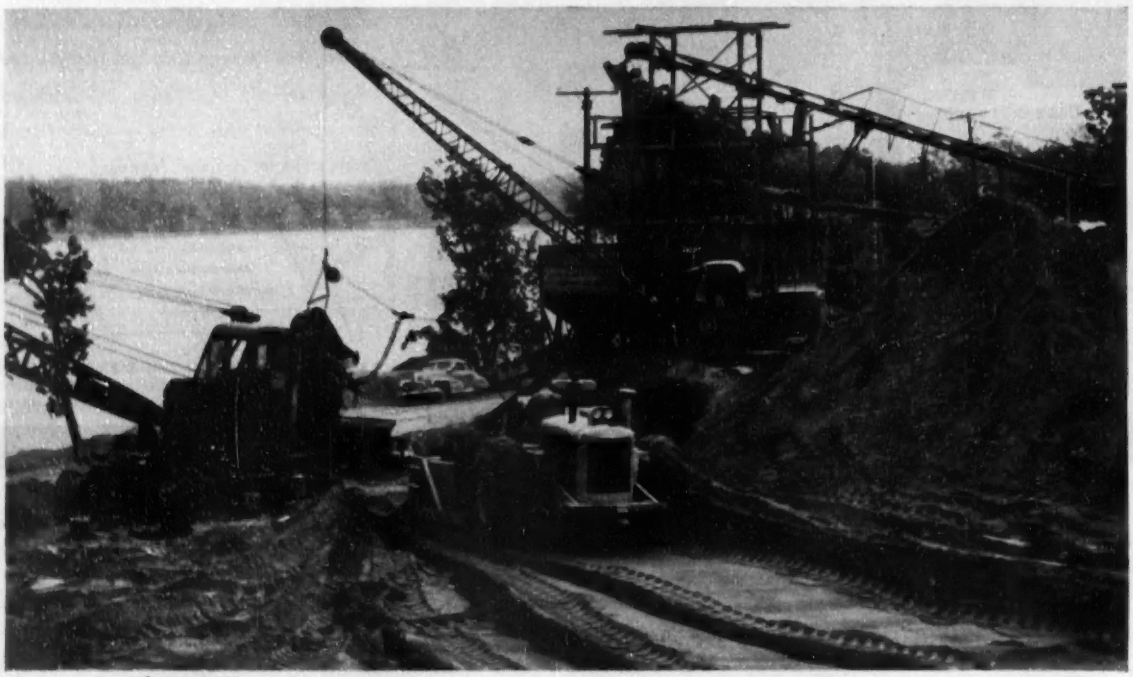


Lifts, carries 10 tons — No outriggers are needed when this small Tournapull-Crane handles 10-ton pulpwood loads for a South Carolina paper company. Crane can lift from any footing, drive anywhere with capacity loads. Low-pressure tires roll easily through mud or sand . . . cross pavement and tracks without damage. Maximum reach is 35 ft; maximum lift, 33 ft.

Sea-going school — The LeTourneau-Westinghouse service-training truck many of you saw in the U.S. or Canada, has become a world traveler. Here, it is being ferried to Havana, Cuba. First assignment there will be several of the same 8-day "schools" given Stateside equipment owners and maintenance men.



Back-fill hauler — On its way to back-fill 2600 ft of 8-inch terra-cotta sanitary sewer lines, Tournapull Rear-Dump hauls 9-ton loads at speeds to 28 mph. Owners, Main Line Construction Company of Ardmore, Pennsylvania, are using this mobile electric-control unit to help move 40,000 cu yds for the 17-acre "Green Meadows" housing development near Wilmington, Delaware.



2 years, $298 for tire repairs — Dozing sand and gravel for dragline-loading of feeding plant is Tournatractor's chief assignment at this pit near Pontiac, Michigan. On typical 175 ft dozing distance, unit moves 45 loads (180 to 200 bank yds) per 50-min hour. 19 mph travel speed lets Tournatractor use spare time profitably, too! When ahead on feeding work, it cleans around shovel, maintains sand and gravel stockpiles, removes stumps, clears brush, strips overburden, etc. Despite continuous use since 1952 in abrasive material, maintenance has been easy and costs low, reports Owner Fred Ward. "Tires, for example, cost us only $298 in 2 years. This sum includes all repairs, plus one new 21.00 x 25 tube. Other original tires and tubes are still good."

(Advertisement)

. . . with performance reports from around the world

Water for western Canada — Sticky mud and 10% adverse grades fail to keep Tournapulls from rushing completion of the Travers Dam, on the Bow River in southern Alberta. When finished, this $2,500,000 earthfill structure will store 265,000 acre feet of water and will irrigate 220,000 acres of unproductive land. Emil Anderson Construction Co, Hope, British Columbia, is using 8 electric-control C Tournapulls and a rubber-tired Tournatractor to help move the 4,350,000 cu yds of clay and gravel involved. "C's" complete hilly 5400 ft cycles in 8 minutes. Each unit delivers 62 pay yds hourly. Says Job Supt "Hump" Humphrey, "Tournapulls turn sharper, work better in mud than any other scraper. Operators prefer them because they're easier to run."

Maneuvers fast inside buildings — Removing debris from a LaSalle (Illinois) factory, Tournapull Rear-Dump works with 2-yd front-end loader to heap 12 yds per load. 12 ft turn radius, power steer enable Rear-Dump to maneuver in 40-ft space between buildings . . . back through 10-ft doorway . . . position quickly at loader. Owner is J. P. Hollerich, LaSalle.

Grader efficient loader for "D" —Leveling a subdivision in Vallejo, California, motor grader heaps D Tournapull with 5 pay yds of topsoil and unripped sandstone in less than a minute. Fast load helps "D" deliver 55 pay yds per 55-min hour on 2200-ft cycles. Owner is Stegge Development Co, Vallejo. For more information, write LeTourneau-Westinghouse, Peoria, Illinois.

Tournapull—Trademark Reg. U.S. Pat. Off. Tournatractor—Trademark Pic-706-G

▲ **PENNSYLVANIA**—State Hy. and Bridge Auth., 506 North Office Bldg., Harrisburg,

C. J. Langenfelder & Son, Inc., 8427 Pulaski Hy., Baltimore, Md., LB **$665,912**, 4,126 ft. divided hy. of crushed aggregate base with bit. surf. variable in width, with concrete divisor, two I-beam bridges, L.R. 09156 (3), Falls Twp., Bucks Co. Bids Aug. 6. CD 7/21.

Sanctis Constr. Inc., 410 Marlow St., Pittsburgh 20, Pa., LB **$506,000**. wharf pavement and slope treatment at Point Park, PITTSBURGH, PA. Dept. Property & Supplies, 319 N. Front St., Harrisburg, Pa. Ralph E. Griswold & Assocs., 206 Gladstone Rd., Pittsburgh, Pa., engrs. Bids Aug. 4.

† **Piracci Constr. Co.**, 2552 Woodbrook Ave., Baltimore, Md. CA **$520,639**. special AAA facilities, Site W-26-CL, near St. Margarets, Anne Arundel Co., MARYLAND. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. CD 7/19 under LB.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Talbott-Marks Co., Box 308, Clarksville, Va. CA **$957,340**. grading, drainage, paving 2.522 mi. Baltimore-Harrisburg Expressway, Contr. B 578-20-420, Baltimore Co.;

Jas. Julian & Co., 4055 Dupont Rd., Elsmere, Del. CA **$599,521**. grading, drainage, surf. second lane wid'n., resurf. existing lane U. S. Rte. 13, Fruitland Contr. WI 280-2-120, Wicomico Co.;

E. D. Plummer & Sons, Chambersburg, Pa. CA **$744,153**. grading, drainage, wid'n., relocation surf. 3.224 mi. U. S. Rte. 1, near Conowingo, Contr. H 363-4-420, Harford Co. Grand total $2,311,014. CD 6/29 under LB.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Burkholder & Burkholder, Box 1240, Lynchburg, Va. LB **$1,288,698**. grading, drainage, surf. 2.85 mi. relocated U. S. Rte. 240, near Rockville, Contr. M 485-9-320, Montgomery Co. Bids Aug. 3. CD 7/21.

† **U. S. Eng.**, 24 St. and Maryland Ave., Baltimore, Md. rejected bids Apr. 14, Nike I launching and control area, Site BA-31-CL, near Fairlee, Kent Co., MARYLAND. LB **$409,940**. Site to be changed. Will re-advertise. CD 4/19 under LB.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Contee Sand & Gravel, Laurel, Md. LB **$222,866**. 5 span steel I beam bridge over U.S. Rte. 301 and B.A.R.R., near Glen Burnie, Contr. AAA 473-6-520, Anne Arundel Co.; LB **$274,104**. dual 4 span steel I beam bridge Rte. 176, near Glen Burnie, Contr. AA 473-5-220, Anne Arundel Co.

Trinity Building & Constr. Co., 4420 E. Eager St., Baltimore, Md. LB **$61,327**. Hy. Contr. 1308 c. conc. paving, BALTIMORE, MD. City, Bureau Hys., 303 Municipal Bldg., Baltimore 2, Md. Bids Aug. 4. CD 7/29.

Mario Anello & Sons, Inc., 4001 Second St., Baltimore, Md. LB **$155,493**. Contr. 385-W water mains, Bowleys Quarters, TOWSON, MD. Comrs., Baltimore Co., Court House, Towson, Md. Bids July 29. CD 6/30.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **John A. Johnson & Sons, Inc.**, 303 41st St., Brooklyn 32, N. Y., LB **$4,242,000**, foundations and general constr.;

J. L. Murphy, Inc., 340 E. 44 St., New York 17, N. Y. LB **$397,200**, heating and ventilating;

Lipsky & Rosenthal, Inc., 155 Utica Ave., Brooklyn 13, N. Y., LB **$422,466**, plumbing for Coney Island HOUSES (Proj. NYC-25) in area bounded generally by Surf Ave. W 29 St., Boardwalk and W. 32 St., BROOKLYN, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Aug. 3. CD 7/9.

▲ **John W. Cowper Co. Inc.**, 775 Main St., Buffalo, N. Y. CA **$1,186,700**. est. $1,200,000. PARKING GARAGES Nos. 1 and 2, BUFFALO, N. Y. City, Dpt. P. Wks., City Hall, Buffalo, N. Y. Bids June 25. CD 7/6, under LB.

▲ **F. D. Rich, Inc.**, 322 Main St., Stamford, Conn. LB **$2,527,000**. est. $2,500,000. STATE OFFICE BLDG. Markey, East Washington and S. State Sts. Spec. 18000, 18001, 18002, 18003, 18004. SYRACUSE, N. Y. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids July 29. CD 11/28/45.

▲ **Blaw-Knox Co.**, Farmers Bank Bldg., Pittsburgh, Pa. CA **$5,000,000**. Design and Construct, chlorine-caustic PLANT, LINDEN, N. J. General Aniline & Film Co., 435 Hudson St., New York, N. Y.

Vappi Constr. Co., 240 Sidney St., Cambridge, Mass. CA approx. **$700,000**. 1 story 70,000 sq. ft. brick, blocks parts WAREHOUSE and office, Scott Twp. (General Motors Corp.-Chevrolet Div. lessee). PITTSBURGH, PA. Cabot, Cabot & Forbes, Inc., 60 State St., Boston, Mass.

▲ **Cogswell Constr. Co.**, 513 Park Ave., Baltimore, Md. LB **$2,415,000**. masonry Pimlico Junior High SCHOOL, BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids Aug. 4. CD 7/21.

▲ **Mullan Contg. Co.**, 3945 Greenmount Ave., Baltimore, Md. Owner Builds. est. **$1,500,000**. 9 story 130x200 ft. brick, steel concrete APARTMENT 105-units, and garage, BALTIMORE, MD. CD 3/23.

▲ **Garden Constr. Co.**, 2406 Greenmount Ave., Baltimore, Md. CA **$1,200,000**. 7 groups of brick, concrete, steel garden type APARTMENTS N. Charles St. and Cold Spring Lane, BALTIMORE, MD. Charleston Hall Apartments (Henry A. Knott, Inc.), 2406 Greenmount Ave., Baltimore, Md. CD 12/17/53.

H. Samson, Inc., 3720 Park Heights Ave., Baltimore, Md. Owner Builds. **$476,000**. 27 masonry ranch type HOMES Raymond Ave., Taney Rd., Western Run, BALTIMORE, MD.

▲ **Henry A. Knott, Inc.**, 2406 Greenmount Ave., Baltimore, Md. CA **$1,543,826**. 5 story, rein.-con., steel, brick HOSPITAL, BALTIMORE, MD. Maryland General Hospital, Linden Ave. and Madison St., Baltimore, Md. CD 6/23, under LB.

▲ **Cummins-Hart Constr. Co.**, 318 Wyndhurst Ave., Baltimore, Md. CA **$5,500,000**. bar MILL for stainless steel heating furnaces, cooling beds, charging machines, overhead cranes, bldg. 550 ft. long, BALTIMORE, MD. Armco Steel Corp., Stainless Steel Div., 3400 E. Chase St., Baltimore, Md.

Rupert Constr. Co., 3400 Lancaster Ave., Wilmington, Del., LB **$836,809**, senior High SCHOOL, NEWARK, DEL. Bd. of Educ., Newark, Del. Bids Aug. 4.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Ky., Louisville**—STATE FAIR BLDGS.—BA 9/16—State Div. Purchases, Frankfort, State Fair bldgs., $7,500,000. Plans deposit $100. Extended date, Fred Elswick & Assoc., Commerce Bldg., archts. E. R. Ronald & Assoc., 554 S. Third St., engrs. CD 7/19.

▲ **Ky., Louisville**—STADIUM—BA 9/23—State, Div. Purchases, Frankfort, stadium for State Fair site and horse barns, $2,500,000. Plans deposit $100. Extended date. Fred Elswick & Assoc., Commerce Bldg., archts. C. R. Ronald & Assoc., 554 S. Third St., engrs. CD 7/19.

▲† **Tennessee**—BA About 10/1—U. S. Eng., 306 Federal Office Bldg., Nashville, sub-structure, Cheatham Hyrdo-Electric Power Plant on Cumberland River, 23 mi. from Clarksville, incl. placement of approx. 5,000,000 lbs. of reinforcement steel, small amount of rock excavation, foundation drilling and grouting, install embedded metal (such as ladder rungs, anchor bolts, piping, electrical conduit, trash tacks, and guides, electrical grounding cables, etc.). CD 6/18/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **VIRGINIA**—State Hy. Dpt., 1221 E. Broad St., Richmond,

Rea Constr. Co., Pineville Rd., Charlotte, N. C., LB **$1,656,719**, Jefferson St. viaduct over N. & W. Ry. concrete bridge, walks, curb and gutter, 18,394 sq. yds. 8 in. concrete paving, St. Hy. Proj. 1680-70-71, Roanoke, Roanoke Co. Fay, Spofford & Thorndyke,, 11 Beacon St., Boston, Mass., engrs. Bids Aug. 4. CD 7/6.

† **Diamond Constr. Co.**, P. O. Box 10007, Norfolk, Va. CA **$903,265**, crane track extens. and resurf. Drydock No. 8, Norfolk Naval Shipyard, NOY 82854. PORTSMOUTH, VA. P. Wks. Office and Officer In Charge of Constr., Fifth Naval Dist., Naval Base, Norfolk 11, Va. Bids June 24. CD 6/29, under LB.

F. Miller & Sons, Lake Charles, La. LB **$490,137**. large underpass, appurtenant work at Jefferson St., and Southern Pacific lines, LAFAYETTE, LA. City, Lafayette, La. Bids Aug. 3. CD 7/26.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Daniel Constr. Co.**, 429 N. Main St., Greenville, S. C. CA **$3,000,000**. wool processing PLANT, JAMESTOWN, S. C. Santee River Wool Combing Co., c/o Prouvost Lefabvre Co., c/o Branch River Wool Co., Woonsocket, R. I. CD 8/3.

▲ **Ajax Construction Co.**, 1107 19 St. N. W., Wash., D. C., CA, **$3,376,000**, MEDICAL SCHOOL, University of Florida, GAINESVILLE, FLA. State Bd. of Control, Education Bldg., Florida State University, Tallahassee, Fla. Bids July 27, awarded Aug. 9. CD 6/25.

▲ **Farnsworth & Chambers Co., Inc.**, Box 74, Houston, Tex. LB **$1,142,378**. 4 story, bsmnt., sub-bsmnt., steel, brick OFFICE, JACKSON, MISS. United Gas Pipe Line Co., Deposit Guaranty Bank Bldg., Jackson, Miss. Bids July 22. CD 7/28.

Wood Constr. Co., Box 225, Quitman, Miss. CA **$767,000**. 1 story, Prescott Junior High SCHOOL Prescott Rd., BATON ROUGE, LA. East Baton Rouge Parish, Baton Rouge, La. Bids July 27, awarded July 30. CD 8/3, under LB.

▲† **Lowich Industries, Inc.**, c/o A. & S. Lowich, Waco, Tex. CA approx. **$1,750,000**, 4 story INTERNAL REVENUE bldg., NEW ORLEANS, LA. U. S. Govt. P. Bldgs. Dpt., F between 18 and 19 Sts. N.W, Wash., D. C. CD 8/2.

J. E. Pyle, 207 W. Second St., Little Rock, Ark. LB **$943,019**. est $1,000,000. high SCHOOL, Vivian, SHREVEPORT, LA. Caddo Parish School Bd., Shreveport, La. Bids Aug. 3 CD 7/20.

J. A. Jones Constr. Co., Box 1818, Shreveport, La. CA **$708,700**. 4 story DEPARTMENT STORE, SHREVEPORT, LA Selber Bros., 429 Milam St., Shreveport, La. Bids July 27, awarded Aug. 2. CD 8/3 under LB.

J. A. Jones Constr. Co., Box 1818, Shreveport, La. LB **$401,890**. central WAREHOUSE at Midway and Joplin Sts., SHREVEPORT, LA. Caddo Parish School Bd., Shreveport, La. Ralph O. Kiper, 619 Milham St., Shreveport, La., archt. CD 9/14/51.

Inman Constr. Co., W. Jefferson St., Louisville, Ky. CA **$750,000**. general contract, girls' high SCHOOL Tyler Lane and Newberg Rd., LOUISVILLE, KY. Sisters of Mercy, 2220 Victory Parkway, Cincinnati, O. Bids June 29, awarded July 29. CD 7/7, under LB.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Mich., Muskegon—SCHOOL—BA 8/24—Muskegon Twp., Bd. Educ., Dist. 7 Fractional, North Getty and Giles Sts., Reeths-Puffer Junior High School. Bernard J. Devries, 613 Hackley Union Bank Bldg., archt. CD 4/1/53.

Mich., Big Rapids—MAINTENANCE AND GARAGE—BA 8/24—State, A. N. Langius, dir., State Bldg. Dpt., Lewis Cass Bldg., Lansing, 1 story, 115x200 ft. maintenance and garage, Ferris Institute. Roger Allen & Assoc., 1126 McKay Tower, Grand Rapids, archts.

▲ **Wis., Oneida**—SEMINARY—BA 8/24—Sacred Heart Seminary, Oneida, 2 and 3 story, bsmnt., irregular, 240x293 ft., steel, brick seminary, $1,000,000. Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, archts. CD 6/17.

Mich., Grosse Pointe—SCHOOL—BA 8/25—Bd. Educ., Rural Agricultural School Dist. No. 1, 389 St. Clair Ave., Grosse Pointe, Zone 30, No. 1 addn. to Charles A. Poupard School, Harper Woods. Plans deposit $25, refundable. Earl G. Meyer, 806 Farwell Bldg., Detroit, archt. CD 8/3.

Wis., Port Washington—JAIL—BA 8/25—Ozaukee Co., Port Washington, 2 story, bsmnt., 91x108 ft., concrete, steel, brick, stone jail $350,000. Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, archts. CD 8/26/53.

▲ **O., Columbus**—HIGH SCHOOL—BA 9/17—Bd. Educ., 270 E. State St., 20-room Eastmoor Junior-Senior High School, $1,500,000. CD 11/6/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15,

Fenton Constr. Co., P.O. Box 310, Ashland, O., LB **$280,263**. est. $301,500, Type T-35, 3.284 mi. USR 40, (12.06-12.98), USR 40DA-(0.23-1.24), USR 40, 14.13, (Parts Nos. 2 and 4), UI-556 (9), UI-556 (10), Clark Co.;

Concrete Foundation Corp., 395 E. Capitol St., Columbus, O. LB **$77,921**. est. $94,800, Type T-35 and structure 0.15 mi. SR 256-(13.42-13.49), S-146 (2), Fairfield Co.;

The DeSalvo Constr. Co., 1586 Summit Rd., Cincinnati, O., LB **$1,145,600**. est. $1,242,600, Type T-71 and structure 2.695 mi. USR 50-(8.21-10.47), U-1100 (1), Hamilton Co.;

Fred R. Creager & Sons, Liberty Center, O., LB **$66,802**. est. $73,000, Type T-32 on B-20, 2.067 mi. C.R. No. L. S-246 (2), Henry Co.;

Chapin & Chapin, Inc., Rte. 20 East, Norwalk, O., LB **$215,357**. est. $232,600, Type T-35 on B-119 and structure 0.797 mi. SR 58-9.39, F-616 (3), Lorain Co.;

The City Asphalt & Paving Co., 120 Pike St., Youngstown, O., LB **$63,000**. est. $61,200, Type T-35 on T-33, 2.043 mi. C.R. 299, S-401 (4), Portage Co.;

S. E. Johnson Co., P.O. Box 29, Maumee, O., LB **$119,974**. est. $122,200, Type T-35, 2.454 mi. C.R. Nos. 109 and 110, AD-S-12 (1), Wood Co.;

The Odell Constr. Co., Prouty Rd., Painesville, O., LB **$67,474**. est. $74,450, Type T-71, 0.276 mi. USR 62-12.10, Columbiana Co.;

John R. Jurgensen Co., P.O. Box 254, Newtown, O., LB **$528,938**. est. $587,800, Type T-35 and structure 4.018 mi. USR 22-(13.15-16.13), (17.44), 0.00, Hamilton and Warren Counties;

Edgar Spring, Inc., New Philadelphia, O., LB **$113,680**. est. $111,550, Type T-35 4.262 mi. USR 36-0.00, 20.89, Harrison and Tuscarawas Counties;

Encrete, Inc., 2360 W. Dorothy Lane, Dayton, O., LB **$116,205**. est. $117,900, Type T-35 and structures 0.479 mi. SR 732-(16.48-16.85), Preble Co.;

The Ohio Engrg. Co., 105 Sixth St., Lorain, O., LB **$306,000**. est. $288,400, Type T-35 1.688 mi. USR 224-(10.35-10.66), SR 18, 11.66, Seneca Co.;

Harper Supply, Inc., 118 W. Front St., Napoleon, O. LB **$149,982**. est. $160,800, Type T-35 and structure 0.757 mi. USR 127-5.42, Williams Co. Bids Aug. 3. CD 7/9.

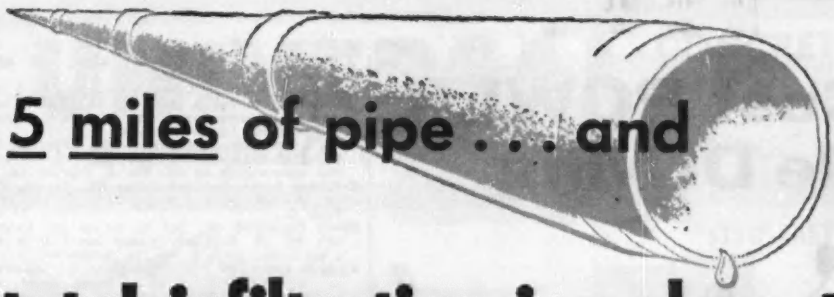
Joseph Skilken & Co., 383 S. Third St., Columbus, O., LB, **$134,265**, conversion of incinerator from hand-fired to automatic sys., COLUMBUS, O. City, City Hall, Columbus, O. CD 2/24/53.

Richland Constr. Co., Mansfield, O., CA **$253,029**, Contr. 3, WW addns. and revision, expand chemical treatment facilities at North Blanchard St. Station, addnl. clear well, increase filtration, etc. FINDLAY, O. City, James J. Sarver, Serv. Dir., Findlay, O. Bids July 23, awarded Aug. 3. CD 6/22.

Village, Lisbon, O., rejected bids July 25, sewage treatment plant, LB **$250,603**; intercepting sewers, LB **$127,468**, LISBON, O. CD 7/7.

General Contracting Co., 2166 Monroe St., Granite City, Ill., CA, **$288,000**, trunk line sewers, the Nameoki section, GRANITE CITY, ILL. East Side Levee and Sanitary Dist., 2642 McCasland Ave., East St. Louis, Ill. CD 2/10/50.

Sterett Constr. Co., Cannelton, Ind., CA **$206,909** 9 miles main and laterals sewers in various streets, lift station, etc. MOUNT VERNON, ILL. City, Chester Lewis, clk., Mount Vernon, Ill. CD 6/10.



5 miles of pipe . . . and total infiltration is only a trickle . . .

. . . with Transite® Sewer Pipe

THE REDUCTION of ground-water infiltration brought about by the Ring-Tite® Joint—now standard on all sizes of Transite® Sewer Pipe—can lead to a number of cost-saving results.

For example, on one recently installed Ring-Tite System using 28,540 feet of Transite Sewer Pipe, in diameters of 6 through 18 inches, the infiltration per inch of diameter, per hour, per mile of pipe came to a mere 0.85 gal. This low infiltration (including that from manholes and connections to house sewers) was achieved despite the fact that a considerable portion of this installation was below the prevailing ground water table. (For specification purposes, an infiltration allowance of 10 gallons per inch of diameter, per hour, per mile of pipe may be used with Transite Sewer Pipe.)

Obviously, such minimum ground-water infiltration helps reduce the load on treatment plants, cuts down on treatment costs, and conserves plant capacity for future expansion needs. This reduced infiltration plus Transite's high flow capacity (Manning's N=.010) often permits the use of smaller diameter pipe for new installations.

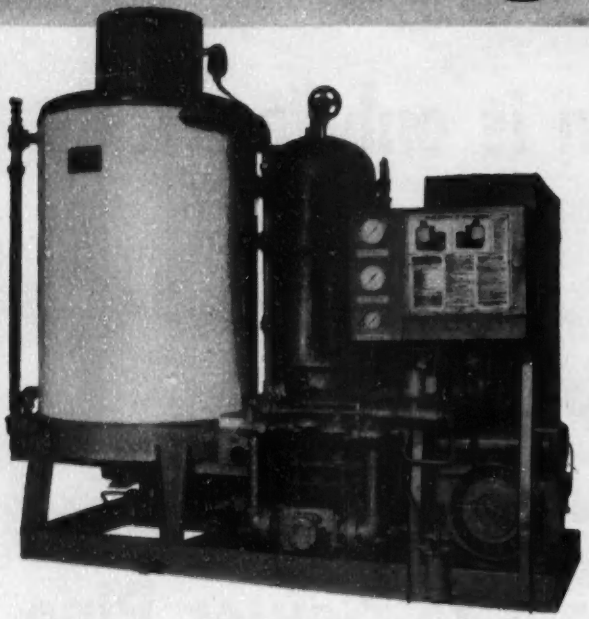
For further information on how this Ring-Tite Joint, used with corrosion resistant asbestos-cement Transite Pipe can help reduce your sewage costs, write Johns-Manville, Box 60, New York 16, N. Y. Ask for folders TR-103A and TR-94A.

Tells more about Transite asbestos-cement Sewer Pipe with Ring-Tite joints—for non-pressure service. Ask for Brochure TR-103A.

Helpful to Engineers— Sewer Design Flow Chart Based on Manning Formula. Ask for Brochure TR-94A.

Johns-Manville TRANSITE SEWER PIPE

Lower-Cost POWER for Pile Driving



The well-known efficiency and reliability of McKiernan-Terry Pile Hammers is now supplemented by similar benefits in producing steam power for pile driving.

The McKiernan-Clayton Steam Generator . . . built expressly for pile driving service . . . is simple in design, light in weight, and convenient to handle, yet it is a sturdy, highly efficient rig that will help to speed up your pile-driving operations and reduce your fuel and operating costs.

For complete information on this power-saving, labor-saving unit, be sure to write for our new Bulletin 63 today.

McKIERNAN-TERRY CORPORATION
13 PARK ROW, NEW YORK 38, N. Y.

Manufacturers of Pile Hammers and Extractors, Coal and Ore Unloaders and Bridges, Grab Buckets and Special Machinery

McKiernan-Clayton

MK-963 A **STEAM GENERATOR**

Core Drilling *by Contract*

Exploration for coal and other mineral deposits. Foundation test boring and grout hole drilling for bridges, dams and all heavy structures. ***Core Drill Contractors for more than 60 years.***

JOY MANUFACTURING CO.
Contract Core Drill Division • MICHIGAN CITY, INDIANA

▲ **ILLINOIS**—Dpt. P. Wks. and Bldgs., Div. Hys., Centennial Bldg., Springfield,
Fitz Simons & Connell Dredge & Dock Co., 10 S. La Salle St., Chicago 3, Ill. LB, **$1,062,279.** substructure for bridge over Illinois River on F. A. Rte. 9, Peoria and Tazewell Counties;
Mantz & Oren, Inc., 109½ Banker St., Effingham, Ill. LB, **$197,351.** widen 3 bridges build 2 rein.-con. slab superstructure on Ill. Rte. 1, Crawford Co.;
McCalman Constr. Co., 619 Secton St., Danville, Ill. LB, **$97,789.** build 3 bridges on U. S. Rte. 150, Edgar Co.;
Howell Engineering Co., 202 W. Willow St., Carbondale, Ill. LB, **$131,161.** viaduct over I. C. R. R., 2 box culverts on F. A. Rte. 14, Jackson Co.;
A. Olson Constr. Co., 1225 Commercial St., Waterloo, Ia. LB, **$135,254.** widen 1 bridge, paved approaches on U. S. Rte. 20, Jo Davies Co. Bids Aug. 3. CD 7/23.

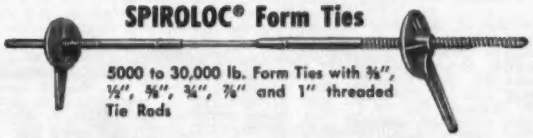
ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield,
Thos. M. Madden Co., 4610 Van Buren St., Chicago 44, Ill. LB **$1,480,453.** c. conc. 0.76 mi. on F.A. No. 131 Congress Street Expressway, Cook Co.; LB **$965,673.** c. conc. 0.51 mi. on F.A. Rte. 131 (Congress Street Expressway), Cook Co.;
J. C. O'Connor & Sons, Inc., 2104 Miner St., Fort Wayne 6, Ind. LB **$612,700.** c. conc. 9.56 mi. and base course 1.74 mi. on US Rte. 51, Shelby and Christian Counties;
Chas. G. Gilmore Asphalt Products, Inc., Anna, Ill. LB **$310,915.** intermittent bit. resurf. c. conc. patching on Ill. Rte. 3, 37,144, 146 and US 51, Alexander, Jackson, Johnson and Pulaski Counties;
Payne & Dolan, Inc., 38 S. Dearborn 3, Ill. LB **$272,000.** bit. resurf. 0.67 mi. on Ill. Rte. 16 in Para and 11.32 mi. on U.S. Rte. 51, Shelby and Christian Counties;
Black Top Constr. Co., Rockford, Ill. LB **$229,840.** grav. or crushed stone base 1.36 mi. on F.A. Rte. 188, Winnebago Co.;
Dale Denny Constr. Co., 507 S. Green St., Anna, Ill. LB **$62,592.** bit. surf. tr. 3.11 mi. on F.H. (forest hy.) Rte. 17, Gallatin Co.;
Skokie Valley Asphalt Co., 1228 Harding Ave., Des Plains, Ill. LB **$141,762.** bit. surf. 3.49 mi. on north entrance to Illinois Beach State Park near Zion, Lake Co.;
Triangle Constr. Co., 480 N. Evergreen Ave., Kankakee, Ill. LB **$60,798.** bit. surf. tr. 2.07 mi. on F.A.S. Rte. 933, Massac Co.;
Marshall M. Erb, R.F.D., Naperville, Ill. LB **$104,147.** grav. or crushed stone base course 2.68 mi. on F.A.S. Rte. 1147, DuPage Co.;
Thomas Constr. Co., Taylorville, Ill. LB **$87,529.** grav. or crushed stone surf. 3.38 mi. on F.A.S. Rte. 716, Fayette Co.;
Frank C. Fentz Co., 901 Tenbroeck St., Paris, Ill. LB **$167,425.** intermittent bit. resurf. 7.2 mi. on Ill. Rte. 1, 13, 34, 142, 145 and 166, Gallatin, Pope, Hamilton and Johnson Counties;
Fitz Simons & Connell Dredge & Dock Co., 10 S. LaSalle St., Chicago 3, Ill. LB **$215,816.** earth grading 0.10 mi. for approach to bridge across Ill. River on F.A. 9, Tazewell Co.;
E. M. Melahn Constr. Co., Algonquin, Ill. LB **$301,575.** c. conc. 1.69 mi., c. conc. base course 2.77 mi. on US Rte. 20, Boone Co.;
Giertz-Melahn Asphalt Co., Inc., 57 Douglas Ave., Elgin, Ill. LB **$101,277.** bit. resurf. 4.49 mi. on U.S. Rte. 20, Boone Co.;
Strunk Bros. & McDougal Hartmann Co., Tiskilma, Ill. LB **$75,316.** c. conc. 0.54 mi., misc. wid'n. on F.A.S. Rte. 238, Bureau Co.;
McDougal Hartmann Co., 1500 N. Adams St., Peoria, Ill. LB **$178,119.** bit. surf. tr. 4.49 mi. on F.A.S. Rte. 64, Carroll Co.;
H. G. Goelitz Co., 5757 Ogden Ave., Cicero, Ill. LB **$255,968.** c. conc. 0.45 mi. bit. resurf. for subway approaches on F.A. Rte. 99 (Cicero Ave.), Cook Co. Bids Aug. 4. CD 7/23.

▲ **WISCONSIN**—State Hy. Comn., State Hy. Office Bldg., Madison, Wis.
Ryan Bros. Co., Janesville, Wis., LB, **$305,320** Contract No. 1, 5.038 mi. S. T. Hy. 11, Proj. T 030-2 (7) Green Co.;
R. B. Vickery Co., Suamico, Wis., LB, **$213,566** Contract 1, 7.651 mi. S. T. Hy. 180, Proj. S 0102 (7), Marinette Co.;
H. Turner & Son, Boscobel, Wis., LB, **$597,453** Contract 1, 11.038 mi. S. T. Hy. 35, Proj. F 028-1 (37), Pierce Co.;
N. M. Isabella, Inc., 714 Market Place, Madison, Wis., LB, **$88,155,** Contract 1, 0.175 mi. City Street, U 5209 (1), Dane Co.;
Vinton Constr. Co. and Wm. U. Vinton, Manitowoc, Wis., LB, **$103,207,** Contract 3, 0.418 mi. S. T. Hy. 13, Proj. T 04-3 (1), Columbia and Sauk Counties; LB, **$125,582,** Contract 1, 0.644 mi. U. S. Hy. 141, Proj. U 5801 (7) Brown Co.;
Schneider-Borchert Co., 604 W. Wisconsin Ave., Milwaukee, Wis., LB, **$449,496,** Contract 1, 0.726 mi. S. T. Hy. 145, Proj. U 5708 (5), Milwaukee Co.;
Schuster Constr. Co., Denmark, Wis., LB, **$668,449** Contract 1, 7.287 mi. U. S. Hy. 141, Proj. F 020-3 (8), Brown Co.;
J. R. Griffith Co., Racine, Wis., LB, **$496,662,** Contract 1, 4.872 mi. S.T. Hys. 42 and 57, Proj. F 01-5 (5), Door Co.;
F. F. Mengel Co., Wisconsin Rapids, Wis., LB, **$64,952,** Contract 1, 2.828 mi. S.T. Hy. 54, Proj. F 044-1 (3), Wood Co.;
Rock Road Constr. Co., 5711 Winnequah Rd., Madison, Wis., LB, **$213,078,** Contract 1, 9.55 mi. S.T. Hy. 26, Projs. T 010-1 (6) and T 010-1 (7), Rock and Jefferson Counties;

UNIVERSAL CONCRETE FORMING EQUIPMENT

a complete line from 1 Source

SPIROLOC® Form Ties

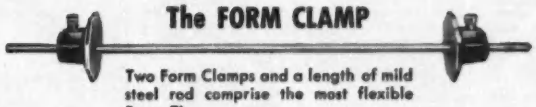


5000 to 30,000 lb. Form Ties with ⅜", ½", ⅝", ¾", ⅞" and 1" threaded Tie Rods

SPIROLOC Form Ties with CONE NUTS

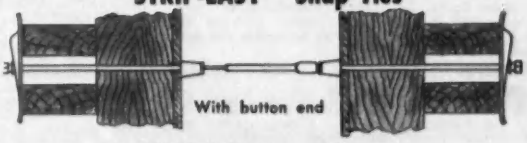
The only Form Tie with an absolutely positive spreader

The FORM CLAMP



Two Form Clamps and a length of mild steel rod comprise the most flexible Form Tie

"STRIP-EASY"® Snap Ties



With button end

TWISTYE® Snap Ties

With loop end

The FORM CLAMP SURE GRIP Principle

Tremendous holding power is provided — assures tight forms

Write for Catalogs describing Universal Concrete Accessories and UNI-FORM Panels—There's no obligation

UNI-FORM® Panels...

THE MODERN FORMING SYSTEM

- **A Complete System — always Automatically accurate**
- **Form Any Concrete . . . Using Less Lumber, Labor and Material Than Any Other Method!**
- **Ready To Use — Fast Job Starts — NO WAITING**
- **Rented — Sold — Rented with a Purchase Option**
- **Complete Engineering and Field Service provided without charge to UNI-FORM Panel users.**

UNIVERSAL FORM CLAMP CO.

GENERAL OFFICES AND FACTORY: 1238 N. KOSTNER • CHICAGO 51, ILLINOIS

OFFICES AND WAREHOUSES.

CLEVELAND, OHIO, 24901 Lakeland Blvd. • BALTIMORE, MD., 661 S. Monroe St. • HOUSTON, TEXAS, 2314 Preston Ave.

SAN LEANDRO, CALIF., 2051-9 Williams St. • LOS ANGELES, CALIF., 5055 South Western Ave

DISTRIBUTORS IN PRINCIPAL CITIES

Service Wherever You Build... Coast to Coast

Copyright 1953 by UNIVERSAL FORM CLAMP CO., Chicago 51, Ill.

Alexander Constr. Co., 4641 Hiawatha Ave., Minneapolis, Minn., LB, **$164,852**, Contract 1, 12.22 mi. S.T. Hy. 15, Proj. T 015-2 (7), Waukesha Co.;

Volck Constr. Co. and R. J. Volck, Rice Lake, Wis., LB, **$162,494**, Contract 2: 11.568 mi. S.T. Hy. 27, Proj. T 049-1 (6) and T 049-1 (7), Rusk and Sawyer Counties;

Henry K. Mews, Waupun, Wis., LB, **$60,316**, Contract 4, U.S. Hy. 41, Proj. FG 03-1 (31) and (32), Fond du Lac Co.;

Joe Jaeger Excavating Co. Inc., West Bend, Wis., LB, **$105,429**, Contract 1, 4.125 mi. Town Road, Proj. P 0-2 (1) and P 0-1 (7), Washington and Fond du Lac Counties;

The White Constr. Co., 710 N. Plankington Rd., Milwaukee, Wis., LB, **$178,816**, Contract 1, 9.399 mi. U.S. Hy. 41, Proj. T 02-2 (3), Milwaukee Co. Bids Aug. 3. CD 7/16-7/23.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **H. L. Yokes Co.**, 1000 Wayside Rd., Cleveland 10, O. CA Approx. **$1,500,000**. 3 story 14,000 sq. ft. masonry garment works PLANT and office bldg., Euclid Ave. and E. 40 St., air-conditioned, CLEVELAND, O. Campus Sweater & Sportswear Co., 234 St. Clair Ave. W., Cleveland 13, O.

▲ **Akso Constr. Corp.**, 44 S. Ludlow St., Dayton, O. CA Approx. **$4,000,000**. 400,000 sq. ft. SHOPPING CENTER, Weston Shopping Center, W. Third St., DAYTON, O. Beerman Investment Corp., 4217 N. Main St., Dayton, O.

▲ **Parr & Buffer**, 5 Ireland Ave., Greenhills, O. Owner Builds. **$2,225,000**, 130 brick HOMES on ext. of Ireland Ave., between Ingram and Cameron Rd. GREENHILLS, O. Gordon Russell Neal & Assoc., Wm. Howard Taft Rd., Cincinnati, O. engrs. Awarded Aug. 3

Ohio Homes, Inc., 317 S. Reading Rd., Cincinnati, O. Owner Builds. **$572,000**. 52 prefabricated HOMES, off Loveland-Madeira Rd., LOVELAND, O. James Wald & Assoc., 1721 Dallas St., Cincinnati, O. engrs. Awarded Aug. 2

Lehmann Bros. Constr. Co., Risingsun, O., CA Approx. **$440,000**. SHOPPING CENTER, South Boundary and Louisiana Ave., at southern edge of city, PERRYSBURG, O. Perrysburg Land Co., c/o Robert S. Powers, III Louisiana St., Perrysburg, O. Childers, Inc., Fremont, O., archt.

▲ **Fred W. Entenman Co.**, 3323 Secor Rd., Toledo, O. CA Approx. **$3,000,000**. 166,000 sq. ft. WAREHOUSE, 12,000 sq. ft. office, red brick with glass block exterior constr., Hill Ave. and Toledo Terminal RR., TOLEDO, O. Kroger Co., 135 Tecumseh St., Toledo, O. CD 6/9/53.

▲ **Owner**, c/o Fitch Schiller & Frank, 100 W. Chicago Ave., Chicago, Zone 10, Ill., Own Forces, **$1,300,000**, 110 HOMES, CHICAGO HEIGHTS, ILL.

▲† **Pathman Constr. Co.**, 100 N. La Salle St., Chicago, 2, Ill., LB **$1,023,163**, WAREHOUSE, machine shop, paving, grading, Elwood Ordnance Plant, JOLIET, ILL. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids July 16. CD 6/23.

Power Constr. Co., 125 Marion St., Oak Park, Ill., LB, **$734,550**, Whittier SCHOOL, OAK PARK, ILL. School District 97, 122 Forest Ave., Oak Park, Ill. Bids July 28. CD 7/16.

▲ **Nilsson & Brent**, 2333 Catherine St., Northbrook, Ill., Own Forces, **$2,500,000**. 95 HOMES, WINNETKA and GLENVIEW, ILL.

▲ **Klug & Smith Co.**, 4425 W. Mitchell St., Milwaukee, Wis., CA, **$1,000,000**, 1 story 380x440 ft., conncrete, steel, brick, blocks wholesale grocery WAREHOUSE-office bldg., WAUWATOSA, WIS. Roundys, Inc., 241 N. Broadway, Milwaukee, Wis. R. J. Strass, 225 E. Michigan St., Milwaukee, engr.

▲ **George A. Fuller Co.**, 111 W. Washington St., Chicago, Ill., CA, **$1,692,000**, general contract, HOSPITAL, WINNEBAGO, WIS. State Dpt. P. Welfare, Madison, Wis. Bids July 1. CD 7/9, under LB.

Champion, Inc., Box 23, Iron Mountain, Mich. CA **$460,000**. 70x130 ft. municipal power plant install coal-ash handling equip., GLADSTONE, MICH. City, H. J. Henrikson, clk., Gladstone, Mich. Bids Aug. 4. CD 7/8.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Minn., Crystal—BA 8/31—Village, Mrs. Clara M. Hillstrom, clk., lateral sanitary sewers, 21,000 lin. ft. 8 to 36 in., 3 lift stations, $625,000. Pfeifer & Shultz, 720 Wesley Temple Bldg., Minneapolis, engrs.

▲† **Tex., Amarillo**—JET ENGINE TRAINING CELLS, etc.—BA 9/9—U. S. Eng., Box 61, Tulsa 2, Okla., jet engine training cells and facilities, incl. steam plant, 7-pairs jet engine training cells, fuel and steam distr. sys. etc., Amarillo Air Force Base, Inv. No. ENG-34-066-55-8. $1,000,000-$2,225,000. CD 2/18/53.

▲ **Tex., Panhandle**—GAS LINES, etc.—Bids Asked—Pioneer Natural Gas Co., c/o C. I. Wall, 1003 Texas Ave., Lubbock, gas transmission lines expans. $2,000,000; gas distr. lines expans. $2,000,000. CD 7/27.

BIDS ASKED—BUILDINGS

Minn., St. Peter—DORMITORY—BA 8/31—Gustavus Adolphus College, E. M. Carlson, pres., 5 story 40x170 ft. dormitory, $600,000. Plans deposit $25, Magney, Tusler & Setter, 20 Foshap Tower, Minneapolis, archts. CD 2/2/54.

Tex., Deer Park—HIGH SCHOOL—BA 8/31—Deer Park Independent School Dist., Deer Park, 2 story 77,000 sq. ft. masonry Junior High School and shop bldg. addn. $860,000. Plans deposit $50. Emory S. White, 666 M & M Bldg., Houston, archt. CD 2/1.

Tex., Port Lavaca—HIGH SCHOOL—BA 8/31—Calhoun School Bd., Port Lavaca, main high school unit, (excluding gymnasium, bank hall, shop). $584,000. Plans deposit $25.

▲ **Tex., San Antonio**—OFFICE BLDG.—BA 9/1—United Services Automobile Assn., 1400 E. Grayson St., 7-story bsmnt., Home Office. $2,000,000. Phelps & DeWees & Simmons, 342 W. Woodlawn St., Box 8127 Laurel Heights Station, San Antonio and Atlee B. & Robert M. Ayres, 342 W. Woodlawn St., Box 8237, Laurel Heights Station, San Antonio, archts. CD 7/29/53.

Tex., Bryan—COURT HOUSE, JAIL—BA 9/7—Brazos Co., Court House, court house and jail. $800,000. Plans deposit $50. Extended date. Caudill, Rowlett, Scott & Assocs., 425 S. Main St., Dallas, archts. F. J. Niven, 3908 Main St., Houston, J. W. Hall, Jr., Bryan, engrs. CD 8/10.

▲ **Tex., Houston**—HIGH SCHOOL—BA 9/9—Houston Independent School Dist. 1300 Capitol St., "Denver Harbor" Junior High School. $1,850,000. Plans deposit $50. Milton McGinty, 2425 Ralph St., co-ord. archt. Stayton Nunn, 3772 Westheimer Rd., archt. H. E. Bovay, Jr. M. Esperson Bldg. and Walter P. Moore, 2 Pinedale St., engrs. CD 3/3.

Tex., Panhandle—PLANT IMPRVS.—Bids Asked—Pioneer Natural Gas Co., c/o C. I. Wall, 1003 Texas Ave., Lubbock, gas plant imprvs., expans. $500,000. CD 7/27.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul.

L. Joyce, Rochester, Minn. LB **$674,714**. grade, grav. base, road-mixed bit. base, plant-mixed bit. surf. 3 mi. at Jordan, Scott Co. Bids July 30. CD 7/14.

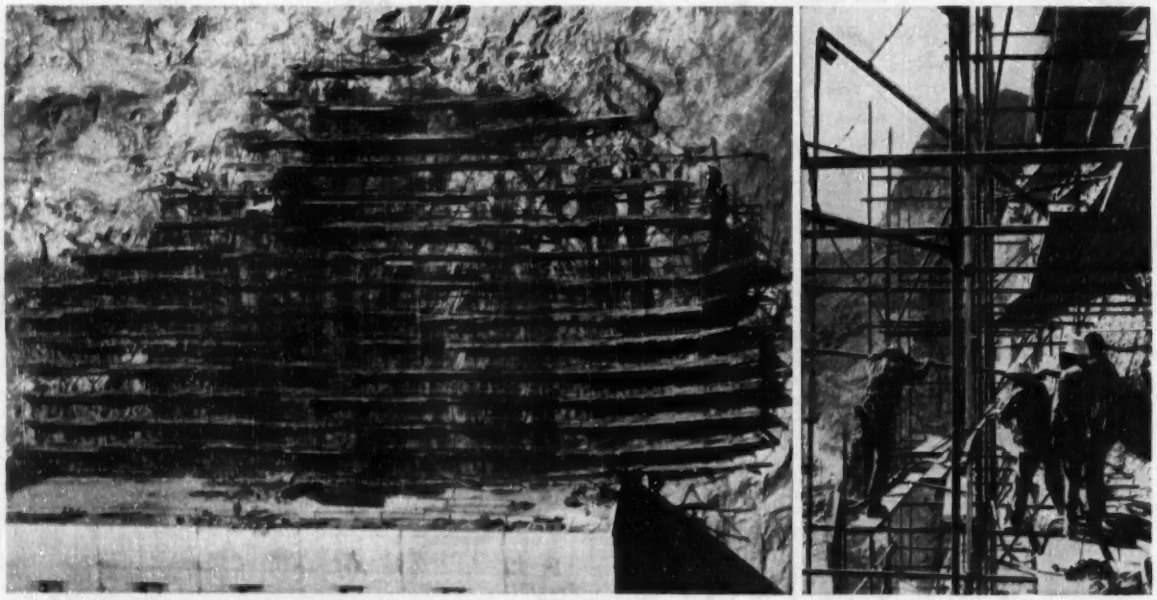
▲ **MISSOURI**—State Hy. Dpt., Jefferson City.

Howell Constr. Co., Sedalia, Mo. LB, **$1,001,824**. graded earth, c.conc. 11.85 mi., Mercer Co.; LB, **$480,243**. c.conc. surf. on R S base, A. C. resurf., Putnam Co.;

J. A. Tobin Constr. Co., 3700 Rainbow St., Kansas City, Kan. LB, **$845,734**. graded earth, two 24 ft. c.conc. 2.173 mi., Clay Co.;

St. Louis County Bridge & Grading Co., 7929 Alabama St., St. Louis, Mo. LB, **$593,832**. graded earth, c.conc. 5.399 mi., Webster Co.; LB, **$246,615**. b. conc. resurf. 0.974 mi., Jefferson Co.;

(*Advertisement*)



SPECTACULAR SCAFFOLDING—To safely anchor a huge rock slab, overhanging the Nevada valve house at Hoover Dam, Boulder City, Nev., men of Selby Drilling Co. worked from this immense "TubeLox" Steel Scaffold erected along the sheer canyon wall. "TubeLox" was used because it could be cantilevered inward, conforming to the contour of the massive 180 x 120 x 19 ft. slab. Safe support for the fourteen 7'6"-high platforms for drillers required an assembly using 11,000 lineal ft. of "TubeLox." Right: Men place one of the 349 2-in. dia. anchor bars, used to secure the slab to the canyon wall.

FOR GREATER SAFETY . . . EFFICIENCY . . . ECONOMY

Gold Medal LADDERS SCAFFOLDING

THE PATENT SCAFFOLDING CO., INC.

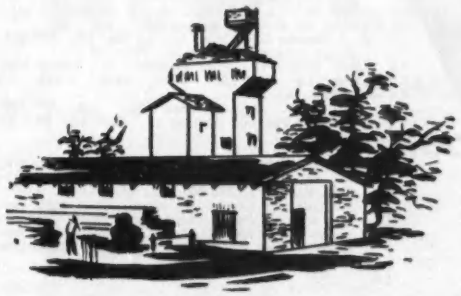
38-21 12th St., Dept. ENR — Long Island City 1, N. Y.

West Coast: 6931 Stanford Ave., Los Angeles, Calif.

Branches in all principal cities

To help you solve any scaffolding problem PS offers a complete nationwide engineering service—available locally. See the Yellow Pages in your 'phone book for the nearest Patent Scaffolding office or representative handling "Gold Medal" Scaffolds.

IS THIS POSSIBLE?



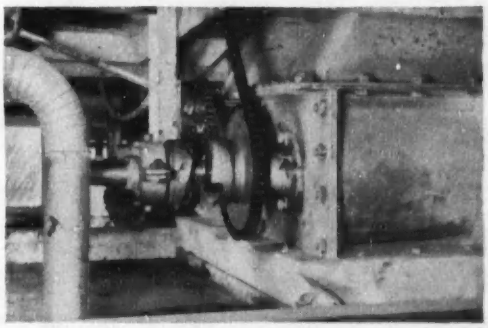
Yes, it's PROVED!

A prominent block manufacturer in Pennsylvania (name on request) in 8 months used $500,000 worth of cement. All was batched through manual equipment. At the end of the 8 month period he showed a shortage of 8% or $40,000 worth of cement.

This was due *entirely to the human element in batching.* The equipment itself functioned perfectly.

Then he installed a BUTLER Automatic Weighing Batcher. From the first day of operation shortages have been eliminated entirely.

The automatic equipment cost him $2000.00.. He is saving at the rate of $40,000 every 8 months over his previous operation!



Two Butler Rotary Feeders insure accurate batching of costly cement — *everytime.*

NOW...

if automatic batching is important in block plants, it's just as vital in the Ready Mixed Concrete Industry.

Simple, rugged automatic controls provide high cement savings.

ROADBUILDERS!

Today, automatic batching is specified in many of the nation's highway programs. The trend is there. Accuracy is economy.

BUTLER AUTOMATIC CEMENT BATCHERS . . .

didn't just happen. Final design "jelled" only after years of field experimental work. They are completely positive regardless of the way the flow of cement misbehaves. Bridging, packing or any balkiness has no effect. The amount of cement weighed and delivered is *always* correct.

Butler Automatic Weighing Batchers can readily be installed in your present plant. Write for complete information.

Butler Bin Co.

947 BLACKSTONE • WAUKESHA, WISCONSIN

How to keep informed on the "with what" part of your business

AT YOUR FINGER TIPS, issue after issue, is one of your richest veins of job information – advertising. You might call it the "with what" type – which dovetails the "how" of the editorial pages. Easy to read, talking your language, geared specifically to the betterment of your business, this is the kind of practical data which may well help you do a job quicker, better – save your company money.

Each advertiser is obviously doing his level best to give you helpful information. By showing, through the advertising pages, how his product or service can benefit *you* and *your* company, he is taking *his* most efficient way toward a sale.

Add up all the advertisers and you've got a gold mine of current, on-the-job information. Yours for the reading are a wealth of data and facts on the very latest in products, services, tools . . . product developments, materials, processes, methods.

You, too, have a big stake in the advertising pages. Read them regularly, carefully to keep job-informed on the "with what" part of your business.

McGRAW-HILL PUBLICATIONS

St. Joseph Fuel Oil & Mfg. Co., 1207 S. 4 St., St. Joseph, Mo. LB, **$95,507.** graded earth, grav. or crushed stone surf. plant mix., bit. surf. 4.416 mi., Buchanan Co.;
Clarkson Constr. Co., 4133 Gardiner St., Kansas City, Mo. LB, **$363,182.** graded earth, c.conc. 2.691 mi., Cass Co.; LB, **$170,084.** c.conc. divided hy. separated by parkway, Jackson Co.;
W. J. Menefee Constr. Co., Sedalia, Mo. LB, **$282,071.** graded earth c.conc. 5.61 mi., Pettis Co.;
Bowen Constr. Co., 3200 Fairmount St., Kansas City, Mo. LB, **$121,211.** wid'n., c.conc. 4.425 mi., Jackson Co.;
Orco Constr. Co., Kirkwood, Mo. LB, **$77,359.** c.conc. 4.254 mi., Webster Co. Bids July 29. CD 7/15.

▲ **S. Patti Constr. Co.**, 1340 Admiral St., Kansas City, Mo. and **Massman Constr. Co.**, 20 W. 9 St., Kansas City, Mo. CA **$5,288,800.** est. $5,345,000. (jointly) Mid-Continent International Airport No. 2 bldg. overhaul base for TWA, 350x390 brick power plant, fire station, etc., KANSAS CITY, MO. City, c/o Reed McKinley, dir., P. Wks. Dpt., City Hall, Kansas City, Mo. Bids Aug. 4. CD 7/15.

Clark Constr. Co., Box 152, Eldon, Mo. LB **$280,686.** Sec. 1, main and outfall sewers;
Parkinson Constr. Co., Camdenton, Mo. LB **$398,383.** Sect. 2, sewage pumping station, Sect. 3 sewage treatment plant, SIKESTON, MO. City, Sikeston, Mo. Bids May 21. CD 5/6.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City,
Amis Constr. Co., 1647 Exchange Ave., Oklahoma City, Okla., LB **$354,428.** est. $330,063, grade, drain, widening 1.846 mi. of US 64 in Alva, Woods Co.; LB **$273,798.** est. $257,898, stabil. aggregate base, b. conc. surf. 7.166 mi. US 66 at Kelleyville, Creek Co.;
Anderson Constr. Co., McAlester, Okla., LB **$196,529.** est. $178,081, grade, drain, b. conc. widening 2.693 mi. U.S. 69, south of McAlester, Pittsburg Co.;
Broce Constr. Co., Woodward, Okla., LB **$60,045.** est. $58,524 stabil. aggregate base, double bit. surf. 5.498 mi. on County Rd., Keyes, Cimarron Co.;
Dahlgren & Brooks Co., Commerce Exchange Bldg., Oklahoma City, Okla., LB **$444,602.** est. $406,394, concrete pavement 3.853 mi. US 66-A north from Witcher, Oklahoma Co.;
Hunter Constr. Co., Ada, Okla., LB **$83,698.** est. $77,534, grade, drain, traffic bound surf. 7.202 mi. St. Hy. 48, Wapanucka, Johnston Co.;
Metropolitan Paving Co., 300 South Indiana St., Oklahoma City, Okla., LB **$353,008.** est. $328,031, b. conc. pavement 3.934 mi. U.S. 66-A north from Witcher, Oklahoma Co.;
Standard Paving Co., 2119 E. 11 St., Tulsa, Okla. LB $309,247. est. $282,427, grade, drain, stabil. aggregate base, b. conc. pavement 0.925 mi. US 66 bypass at Tulsa, Tulsa Co.;
received no bids Aug. 3, grade, drain, stabil. gravel base 1.314 mi. on County Rd. at Eldorado, Jackson Co.; cancelled bids to have been opened Aug. 3, grade, b. conc. widening 3.442 mi. US 66 east of Chandler, Lincoln Co. Bids Aug. 3. CD 7/21.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,
Jack Briscoe, Stillwater, Okla., CA, **$244,773.** est. $247,386, grade, drain and concrete pavement 6.759 mi. St. Hy. 76, Elmore City, Carter Co.

Broce Const. Co., Woodward, Okla., CA, **$105,583.** est. $115,784, stabil. aggregate base, double bit. surf. 5.83 mi. on Co. Rd. at Stilwell, Adair Co.; CA, **$113,026.** est. $124,174, grade, stabil. aggregate base, rock asph. surf. 3.583 mi. St. Hy. 76, Elmore City, Carter Co.;
Dahlgren-Brooks Co., Commerce Exchange Bldg., Oklahoma City, Okla., CA, **$218,296.** est. $212,121, b.conc. widening 6.709 mi. U. S. 81, south of Rush Springs, Grady Co.;
John Ertz Const. Co., 1517 N. Broadway, Oklahoma City, Okla., CA, **$99,636.** est. $109,285, grade, stabil. aggregate base and rock asph. surf. 3.509 mi. US 271, south of Hodgens, Leflore Co.;
Hunter Const. Co., Ada, Okla., CA, **$74,496.** est. $71,092, b. conc. widening 5 mi. US 70, east of Ardmore, Carter Co.;
Pool Const. Co., Shawnee, Okla., CA, **$254,541.** est. $250,383, grade, stabil. aggregate base and rock asph. surf. 6.343 mi. US 59, McCurtain, Leflore Co.;
Harold Redding & Assoc., Lawton, Okla., CA, **$512,331.** est. $530,707, four-lane concrete pavement 0.964 mi. US 62 at Fort Sill, Comanche Co.;
Southern Const. Co., 1405 W. Reno St., Oklahoma City, Okla., CA, **$67,954.** est. $75,021, grade and underpass 1.023 mi. St. Hy. 34, Camargo, Dewey Co. Grand total $1,690,638. Bids Aug. 3. Awarded Aug. 4. CD 7/21.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,
Suddreth Constr. Co., Fidelity Bank Bldg., Oklahoma City, Okla., CA **$135,442.** est. $155,664, two highway grade separations on U.S. 362 at Fort Sill, Comanche Co.; CA **$108,038.** est. $122,864, highway grade separation at Peoria St. on U.S. 76 Bypass, Tulsa Co. Bids Aug. 3, awarded Aug. 4. CD 7/21.

▲ **A & A Constr. Co.**, W. Okmulgee Ave., Muskogee, Okla., CA, **$844,991.** est. $1,100,000, 6 mi. 48 in. water flow line from Fort Gibson;
Henryetta Constr. Co., Henryetta, Okla., CA, **$249,010.** est. $320,000. 48 in. flow line under the Arkansas River. MUSKOGEE, OKLA. City, City Hall, Muskogee, Okla. Bids July 26, awarded Aug. 3. CD 6/18.

New Chevrolet Trucks

deliver more power, more ruggedness, for less money!

Making sure the truck you buy has plenty of power and chassis ruggedness is good business in any man's book. Getting the money-saving extra power and ruggedness of Chevrolet trucks is *better* business in any man's book*keeping*.

EXTRA POWER MEANS BIGGER SAVINGS

No doubt about it, the extra power you get from new high-compression Chevrolet truck engines means you're going to pay out less for gasoline. Over a year, that adds up to a sizeable savings. Increased power brings time-saving benefits, too—greater acceleration and hill-climbing ability . . . you haul faster, get the job done quicker!

GREATER RUGGEDNESS CUTS OPERATING COSTS

Heavier axle shafts and wheel hubs on two-ton models; bigger, more durable clutches on light- and heavy-duty models; stronger, more rigid frames on all models. These features pay off in extra-low upkeep costs . . . extra miles of dependable truck life.

But these *while-you-drive* savings aren't all, by a long shot. You even save *when you buy*. For Chevrolet is America's lowest-priced line of trucks. Stop by your Chevrolet dealer's soon to see the "savingest" trucks on the road. He'll show you models ideally suited to your job, with facts to prove you'll get more for your money. Chevrolet Division of General Motors, Detroit 2, Mich

CHEVROLET

MOST TRUSTWORTHY TRUCKS ON ANY JOB!

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

THREE GREAT ENGINES—The new "Jobmaster 261" engine* for extra heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. **NEW TRUCK HYDRA-MATIC TRANSMISSION***—offered on ½-, ¾- and 1-ton models. Heavy-Duty **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **DIAPHRAGM SPRING CLUTCH**—improved-action engagement. **HYPOID REAR AXLE**—for longer life on all models. **TORQUE-ACTION BRAKES**—on all wheels on light- and medium-duty models. **TWIN-ACTION REAR WHEEL BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—greater holding ability on heavy-duty models. **NEW RIDE CONTROL SEAT***—eliminates backrubbing. **NEW, LARGER UNIT-DESIGNED PICKUP AND PLATFORM STAKE BODIES**—give increased load space. **COMFORTMASTER CAB**—offers greater comfort, convenience and safety. **PANORAMIC WINDSHIELD**—for increased driver vision. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—easier, safer handling. **ADVANCE-DESIGN STYLING**—rugged, handsome appearance.

**Optional at extra cost. Ride Control Seat is available on all cabs of 1½- and 2-ton models, standard cabs only in other models. "Jobmaster 261" engine available on 2-ton models, truck Hydra-Matic transmission on ½-, ¾- and 1-ton models.*

BITUMULS® is used with confidence

THIS PICTURE tells a story that has deep significance for Roadbuilders everywhere. It shows a group of our Field Engineers attending a "class" that is being held at our training Laboratory.

The group contains men of varying ages, some with long service with our company; others with very few years behind them. Engineers all, they are here for a program of education and re-education. This we maintain to keep all of our men informed on the latest techniques in asphalt paving.

From all over the nation, factual jobs, reports, specifications, motion pictures, slide films, and photos—are gathered and sent for instructional use at this information center. At regular intervals, groups of our Field Engineers attend this "school." They then return to their own areas with newest information on the application of ours and other products.

The reason for this program is simple: we want you, the Roadbuilder, to be able to accept the word of our Field Men with confidence; because it is only in terms of his ability to serve you that the worth of our products can be measured.

There's a Bitumuls Field Engineer working out of an office near you. Call him anytime that you feel he can be of service.

Ask for our new booklets, "Bitumuls Surface Treatments and Penetration Pavements," and "Bitumuls for Maintenance."

AMERICAN Bitumuls & Asphalt COMPANY

200 BUSH STREET, SAN FRANCISCO 4, CALIFORNIA

E. Providence 14, R. I. Perth Amboy, N. J. Baltimore 3, Md. Mobile, Ala.
Columbus 15, Ohio Tucson, Ariz. Seattle, Wash. Baton Rouge 2, La.
St. Louis 17, Mo. Inglewood, Calif. Oakland 1, Calif. Portland 7, Ore.
Washington 5, D. C. San Juan 23, P. R.

Dallas Power & Light Co., Dallas Power & Light Bldg., Dallas, Tex. Force Account. **$600,000,** transformer units for new lines; **$150,000,** metering extens., DALLAS, TEX. CD 7/19.

▲ **Fish Engrg. Co.**, M & H Bldg., Houston, Tex., CA Approx. **$160,000,000.** Design and Construct, 159 mi. 18-in. pipe; 680 mi. 22-in. pipe; 387 mi. 26-in. pipe; 143 mi. 14-in. pipe; 13 compressor stations, COLORADO, UTAH, WYOMING, IDAHO, OREGON, WASHINGTON and NEW MEXICO. Pacific Northwest Pipe Line Corp., Texas Eastern Bldg., Shreveport, La. CD 6/23.

BUILDINGS

LOW BIDS AND CONTRACTS

Elan & Ness, Fergus Falls, Minn. CA est. **$750,000.** general contract, 2 story, bsmnt., 45,000 sq. ft. OFFICE, FERGUS FALLS, MINN. Otter Tail Power Co., Fergus Falls, Minn. Bids July 7. CD 6/22.

▲ **I. E. Millstone Constr. Co.**, 8510 Eager Rd., Brentwood 17, Mo. Owner Builds. est. **$1,500,000.** 1 story, rein.-con., masonry WAREHOUSE and office containing 200,000 sq. ft. in 1 story warehouse and 2 story office 20,000 sq. ft., spur railroad track, parking facilities, 8510 Eager Rd., BRENTWOOD (ST. LOUIS 17 P. O.), MO. General Grocer Co., 301 S. 8 St., St. Louis 2, Mo.

Gregory Garden Apartments, Inc., c/o Geo. C. Norton, 1010 Baltimore St., Kansas City, Mo. Own Forces. est. **$500,000.** garden APARTMENT incl. 2 bldgs., 48 units, parking facilities, Gregory and Oak Sts., Rockhill Rd., KANSAS CITY, MO. J. F. Lauck, 6225 Brookside St., Kansas City, Mo., archt. CD 6/11/53.

Sam Dasta & Sons Co., 715 Charlotte St., Kansas City, Mo. CA est. **$750,000.** Park Central SHOPPING CENTER 115x270 ft., 30,000 sq. ft., parking facilities, 31 St. and Indiana St., KANSAS CITY, MO. Brougham Estate Co., c/o John A. Moore & Co., (managers), Victor Bldg., Kansas City, Mo. Wm. B. Fullerton, 15 W. 10 St., Kansas City, Mo., archt.

Hiram Elliott Constr. Co., Commerce Bldg., Kansas City, Mo. CA est. **$680,000.** 2 story, 176x330 ft. WAREHOUSE KANSAS CITY, MO. Colgate-Palmolive Peet Co., 18 and Kansas Ave., Kansas City, Kan. Bids July 1. CD 6/15.

C. A. Bennett Constr. Co., 3252 Roanoke Rd., Kansas City, Mo. CA **$785,000.** Eugene Field SCHOOL, Northeast SCHOOL and northwest SCHOOL addns., MEXICO, MO. Bd. Educ., Mexico, Mo. CD 6/8.

Murch-Jarvis Constr. Co., 718 Locust St., St. Louis 1, Mo. CA est. **$900,000.** 4 story, 165x240 ft., brick, steel, concrete sporting goods mfg. PLANT Delmar Blvd. between 23 St. and Jefferson Ave., ST. LOUIS, MO. Rawlings Mfg. Co., 2307 Lucas Ave., St. Louis 3, Mo. P. John Hoener & Assoc., 4227 Watson Rd., St. Louis 9, Mo., archts. CD 7/15.

Risch Building & Real Estate Co., 9100 Gravois Rd., St. Louis 23, Mo. Owner Builds. est. **$460,000.** forty-six 1 story, brick DWELLINGS 7300 and 7400 blocks Yates and Leona and 400 block Koeln Aves., ST. LOUIS, MO.

▲ **Olson Constr. Co.**, 410 S. 7 St., Lincoln, Neb., CA **$1,154,000.** Lefler Junior HIGH SCHOOL, LINCOLN, NEB. Bd. Educ., 720 S. 22 St., Lincoln, Neb. Bids July 22. CD 8/4, under LB.

Singleton-Musick, Box 2130-A, Amarillo, Tex., CA **$580,000.** OFFICE, AMARILLO, TEX. Western National Life Insurance Co., 10 and Taylor Sts., Amarillo, Tex. Bids July 29. CD 7/8.

Frank W. Sharp Constr. Co., 2202 Rosslyn St., Houston, Tex., CA **$303,190,** 25 frame DWELLINGS; CA **$348,285,** 30 frame dwellings; CA **$340,075,** 28 frame, masonry trim dwellings, concrete slab fdn. in First Unit, Sect. 1, Grand total $991,550, BELLAIRE, TEX. Frank W. Sharp, 2202 Rosslyn St., Houston, Tex. CD 7/16.

Meyerland Co., c/o Thomas A. Robinson, 510 Taft St., Houston, Tex., Own Forces. **$370,000,** 20 brick veneer DWELLINGS, concrete slab fdn.; **$392,150,** 23 brick and stone exterior dwellings, concrete slab fdn., BELLAIRE, TEX. CD 7/26.

▲ **Construction Div. of Carr P. Collins**, 913 Commerce St., Dallas, Tex., CA **$391,500,** (a) 41 frame DWELLINGS, concrete slab fdn.; CA **$315,750,** (b) 28 frame dwellings, concrete slab fdn.; CA **$368,150** (c) 39 frame dwellings, concrete slab fdn. Grand total $1,075,400. DALLAS, TEX. Mayflower Investment Co., c/o Carr P. Collins, 913 Commerce St., Dallas, Tex. CD 7/28.

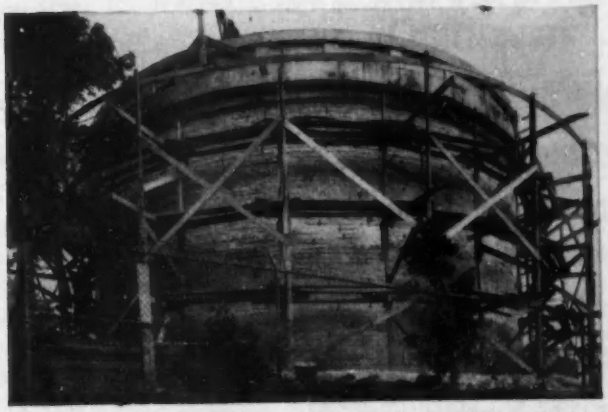
G. E. Bass & Co., Box 1033, Jackson, Miss., CA **$635,033.** Tex. 17-6, HOUSING Proj. for Negroes, GALVESTON, TEX. Galveston Housing Auth., City Hall, Galveston, Tex. Bids June 10. CD 6/16, under LB.

Braswell Building, Inc., 1306 Texas St., Houston, Tex. CA **$309,910,** 18 brick, DWELLINGS, concrete slab fdn.; CA **$338,145,** 26 frame, masonry trim dwellings, concrete slab fdn.; CA **$310,000.** 20 brick dwellings, concrete slab fdn., in Area No. 4 Grand total $958,055. HOUSTON, TEX. Home Owned Properties, Inc. 1306 Texas St., Houston, Tex. CD 6/26.

▲ **Houston Building Corp.**, 2nd Natl. Bank Bldg., Houston, Tex., Owner Builds. Approx. **$4,500,000.** 15-story bsmnt., APARTMENT, 85-units, and 335 one-bedroom apartments, Holcombe Blvd., HOUSTON, TEX. CD 7/2.

Linbeck Constr. Corp., Box 13007, Houston 19, Tex. LB **$539,670.** Elementary SCHOOL in Strawberry Hills area. PASADENA, TEX. Pasadena Independent School Dist., Pasadena, Tex. Bids July 29. CD 6/24.

Bellaire Lumber Co., Inc., 7903 S. Flores St., San Antonio, Tex., Own Forces. **$336,400,** 28 brick veneer DWELLINGS, concrete slab fdn.; **$334,115,** 36 frame dwellings, concrete slab fdn., SAN ANTONIO, TEX. CD 6/24.



CEMENT GUN COMPANY PRE-STRESSES AND RESTORES *EXISTING* WATER TANK

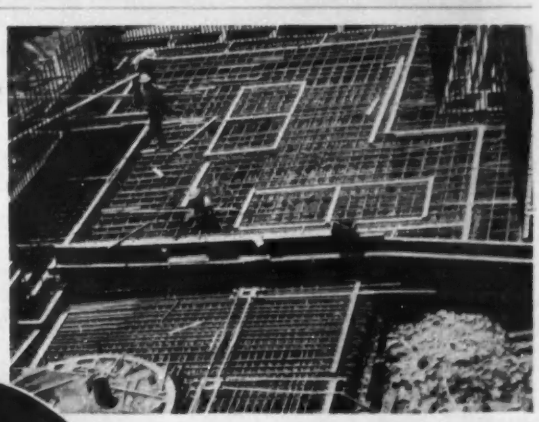
The progress picture above shows a stage of our repair work on a concrete water tank in New England. This tank was completely lined with reinforced "GUNITE" to stop seepage which had caused serious disintegration to the exterior of the tank. The entire outside of the tank was subsequently chipped and existing hoop rods exposed.

To strengthen the tank, wedges were driven behind the rods to take up the slack. This placed the rods in tension and the concrete in direct compression. Wire mesh was then attached to the reinforcing rods and the entire tank treated with two inch mesh reinforced "GUNITE."

The use of "GUNITE" for repair and construction of reservoirs, bridges, buildings, etc., is illustrated and described in Bulletin A 2400. We will gladly send a copy at your request. On your letterhead please.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PA., U. S. A.

MANUFACTURERS OF THE "CEMENT GUN"



When It's Time To Set Steel..

When it's time to set steel, the best excuse in the world doesn't take the place of the needed reinforcing bars.

Connors service is dependable, and Connors bars fit your job—bent and fabricated to your exact specifications.

Check your rebar needs with Connors—you'll be glad you did when it's time to set steel . . .

CONNORS PRODUCTS
- Concrete Reinforcing Bars
- Hot Rolled Strip
- Merchant Bars
- Special Sections

CONNORS STEEL DIVISION
H. K. PORTER COMPANY, INC.
OF PITTSBURGH
P.O. BOX 2562 • BIRMINGHAM, ALA.

San Pedro Development Co., San Pedro Ave., San Antonio, Tex., Own Forces. $310,000. (b) 27 frame DWELLINGS, concrete slab fdn.; $355,750, (c) 35 frame dwellings, concrete slab fdn., SAN ANTONIO, TEX. CD 6/30.

F. L. Scott & Son, 2402 W. King's Hy., San Antonio, Tex. LB $786,945, est. $325,000, FINE ARTS BLDG. incl. auditorium, SAN ANTONIO, TEX. San Antonio College, 401 Navarro St., San Antonio, Tex., Bids Aug. 9. CD 7/15.

A. A. Waitkus, Builder, 206 Montrose St., Houston, Tex. CA $358,375, 33 frame DWELLINGS, concrete slab fdn.; CA $332,150, 29 frame dwellings, concrete slab fdn. SHELDON, TEX. A. A. Waitkus, 206 Montrose St., Houston, Tex. CD 7/14.

▲ Robert H. Lupton, Builder, 4207 Byron St., Houston, Tex., CA $354,085, (a) 36 frame DWELLINGS, concrete slab fdn.; CA $394,500 (b) 39 frame dwellings, concrete slab fdn.; CA $304,750, 28 frame, masonry trim dwellings, concrete slab fdn., Grand total $1,053,335. SPRING BRANCH, TEX. Robert H. Lupton, 4207 Byron St., Houston, Tex. CD 6/16.

R. R. Jones, Elm Mott, Tex., LB $495,000. est. $350,000. 1 story masonry, concrete, plaster, etc. CHURCH and rectory, WEST, TEX. Church of the Assumption, c/o E. J. Polcak, pastor, West, Tex. Bids May 18. CD 4/14.

Stalder & Son, 1010 Corona St., Denver, Colo., Owner Builds, $900,000 10 story, 101-unit, four penthouse units, APARTMENT, DENVER, COLO. Ketchum & Konkel, 1090 Fox St., Denver, Colo., engrs. Huntington and Breisford, 370 W. 7 St., Denver, archts.

▲ Carl E. Maxey Constr. Co., Box 108, Lubbock, Tex. CA $2,500,000. 7 story bsmnt. 300x300 ft. brick, tile HOTEL swimming pool, ALBUQUERQUE, N. M. Homer G. Maxey & Assocs., Plainsman Hotel, 1611 Fourth St., Lubbock, Tex. CD 10/28/53.

FAR WEST

SOON LETS CONTRACT—HEAVY CONSTRUCTION

▲ Wash., Seattle—GRADING—Boeing Airplane Co., 7755 E. Marginal Way, soon lets contract, grading, c. conc. 18,000 sq. yd. parking area for materials handling bldg., Total est. $2,000,000. Harmon, Pray & Detrich, Lloyd Bldg., engrs. CD 5/20.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† West Winds, Inc., 1025 Battery St., San Francisco, Calif. LB, $124,389. two 96 in. hollow-jet valves with control units and handling equip. Palisades Proj. Item 1, Spec. DS 4186, IDAHO. Bureau Reclamation, Dpt. Interior, Bldg., 1A, Denver Federal Center, Denver, Colo. Bids July 27. CD 6/23.

IDAHO—State Hy. Dpt., Boise, Idaho,
Commercial Builders Inc., Moscow, Idaho, CA, $92,181, 105 ft. concrete bridge and approaches, .582 mi. State Hy. 43, Shoshone Co. Bids July 27.

† H. P. Adams, Constr. Co., 901 Orange Ave., Yuma, Ariz., LB $166,173, photo lab and service club, Yuma Air Force Base, Eng 04-353-54-2, YUMA, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Aug. 5. CD 7/15.

† Wells Cargo, Inc., 1775 E. 4th St., Las Vegas, Nev. CA $104,768. est. $150,000. rehabilitate existing runway, Nellis Air Force Base. ENG 04-353-54-122. LAS VEGAS, NEV. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids July 22, awarded July 23. CD 7/7.

† OREGON—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland,
cancelled bids to have been opened Aug. 17, grading 5.788 mi. Goodwin Peak Rd., Lane and Douglas Counties. CD 8/9.

Warren Northwest, Inc., Box 5072, Portland, Ore., LB, $107,689, street and alley imprvt., MEDFORD, ORE. City, City Hall, Medford, Ore., E. N. McKinstry, c/o owner, city engr.

J. H. Lipow Constr. Co., 1424 S. La Brea St., Los Angeles, Calif., LB $185,924, stadium, COSTA MESA, CALIF. Orange Coast Junior College Dist., 19951 S. Harbor Blvd., Costa Mesa, Calif. Bids Aug. 2.

Pacific Allied & Goudeseune Constr. Co., Box 907, Westminister, Calif., LB $167,686, 5 m.g. water storage reservoir, LAGUNA BEACH, CALIF. Laguna Beach County Water Dist., 306 3 St., Laguna Beach, Calif. Bids July 27. CD 7/19.

J. L. Lipow, 1424 S. La Brea Ave., Los Angeles, Calif., CA $75,061, utility tunnel to music bldg. and physical science bldg., LOS ANGELES, CALIF. University of Calif., 405 Hilgard Ave., Los Angeles, Calif. Bids July 13, awarded July 23.

Robert Vlacich, 2901 Worthen Ave., Los Angeles, Calif., LB $120,071, sanitary sewers in Navarro Ave., C.I. 1593, Altadena, LOS ANGELES, CALIF. Los Angeles Co.; Hall of Records, Los Angeles, Calif. Bids July 30. CD 7/2.

Louis J. Strona, 1538 Philadelphia St., Pomona, Calif., LB $181,844, rein.-con. conduit, gunite linings Buena Vista and Santa Fe Channels, Monrovia, LOS ANGELES, CALIF. Los Angeles Co. Flood Control District, 2250 Alcazar St., Los Angeles, Calif. Bids July 30. CD 7/8.

Vido Kovacevich, 354 Rosemead Blvd., Rosemead, Calif., LB $424,862, imprv. Gotham St., C.I. 1449, Bell Garden, LOS ANGELES, CALIF. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids July 30. CD 7/2.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ S. L. Rowland, 102 S. 72 St., Tacoma, Wash. Day Labor. $2,000,000. 200 HOUSES, Southgate area, TACOMA, WASH.

E. E. Gettergren, 5723 S. E. 21 St., Portland, Ore., LB, $500,700, est. $500,000. processing PLANT, PORTLAND, ORE. Blue Bell Potato Chip Co., 4932 S. E. 63 St., Portland, Ore., Bids Aug. 3. CD 7/13.

Edwin Sandberg Co., 2304 N. Killingsworth St., Portland, Ore., Own Forces. $550,000. four APARTMENT BLDGS. S. E. Waverly between 29 and 31 Sts., PORTLAND, ORE. Don Byers, Builders Exchange Bldg., Portland, Ore. archt. Awarded Aug. 3.

Guy E. Hall, Box 1723, Bakersfield, Calif., CA $565,100, BANK ADDN., BAKERSFIELD, CALIF. Anglo California National Bank, 1731 Chester Ave., Bakersfield, Calif. E. L. McCoy, 2811 "H" St., Bakersfield, archt.

Crestview Estates, 3022 Studebaker Rd., Long Beach, Calif. CA $966,000. 86 frame, stucco DWELLINGS on Karen, Pattez and Shipway Sts., BELLFLOWER, CALIF. Corvette Enterprises Inc., 3022 Studebaker Rd., Long Beach, Calif.

▲ Devon Construction Co., 739 N. Highland Ave., Los Angeles, Calif., Owner Builds, $1,506,100, 144 frame, stucco DWELLINGS on Castellon Rd., De Alcada Dr., BELLFLOWER, CALIF. Palmer & Krisel, 827 Moraga Dr., Los Angeles, archts.

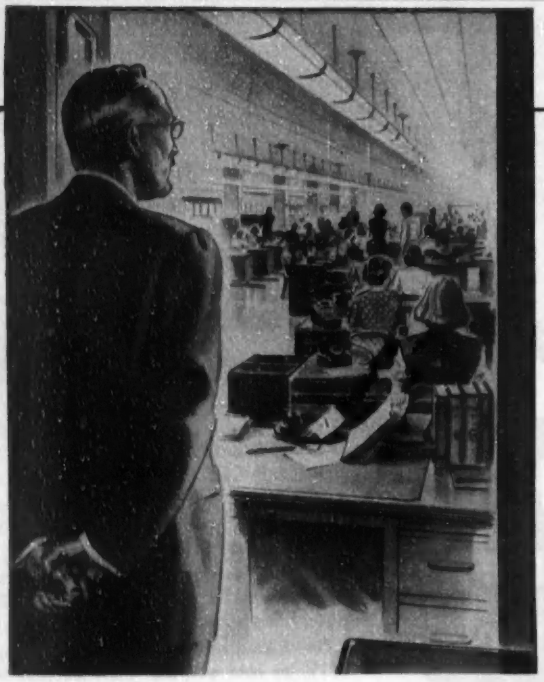
Development Engineers Inc., 2357 Washington Blvd., Los Angeles, Calif., Owner Builds, $408,800, 56 frame, stucco DWELLINGS on La Morada, Lawton Sts., EL MONTE, CALIF.

Albert Gersten, 6363 Wilshire Blvd., Los Angeles, Calif., CA $864,000, 32 frame, stucco APARTMENTS, on Crenshaw Blvd., INGLEWOOD, CALIF. Falls Bldg. Co., Albert Bldg. Co., Myron Bldg. Co., Summers Bldg. Co., 6363 Wilshire Blvd., Los Angeles, Calif.

Leon Slavin, 496 S. San Vicente Blvd., Los Angeles, Calif., CA $499,794, est. $360,000, multi-purpose bldgs. at Colfax, Dixie, Canyon, Nestle Ave. and Tolusa Lake SCHOOLS, LOS ANGELES, CALIF. Los Angeles Bd. of Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids July 27, awarded Aug. 5. CD 7/21.

Hudson Constr. Co., 1277 W. 24 St., Los Angeles, Calif., CA $536,990, multi-purpose bldgs. at Bertrand Ave., Gault St., Lemay St., Reseda and Tarzana SCHOOLS, LOS ANGELES, CALIF. Los Angeles City School District, 1425 S. San Pedro St., Los Angeles, Calif. Bids July 26, awarded July 26. CD 7/21.

▲ Robert E. McKee Inc., 4700 San Fernando Rd., Los Angeles, Calif., CA $1,184,075, general CLASSROOM and OFFICE, LOS ANGELES, CALIF. University of Calif., 405 Hilgard Ave., Los Angeles, Calif. Bids July 8, awarded July 23. CD 7/14, under LB.



Because you trust all your employees there is an inevitable shock to your feelings when one embezzles, but you can avoid the financial shock through an adequate

BLANKET FIDELITY BOND

NATIONAL SURETY CORPORATION
4 Albany Street, New York

one of America's foremost fidelity and surety companies

A MEMBER OF THE FIREMAN'S FUND INSURANCE GROUP

This symbol on your bond or policy guarantees satisfaction.

THE ACTUAL IS LIMITED:
THE POSSIBLE IS IMMENSE
NEW LINCOLN PLANT CREATED BY INCENTIVE INSPIRED CO ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

Erecting shop-fabricated half-sections to form 134′ trusses by arc welding.

ELIMINATES 73 TONS OF STEEL

... Simplifies Construction

WELDED design for this hangar was bid at $449,018.00. Riveted design was quoted at $451,110.00.

Even though the structure was originally designed for riveting, the welding alternate used 5% less steel ... saved $2,092.00 on construction costs.

SAVINGS LIKE THESE *and more,* can be realized on *all* types of structures when welded design is properly used. For additional data on welded structural design, send for "Lincoln Studies in Structural Arc Welding." Write

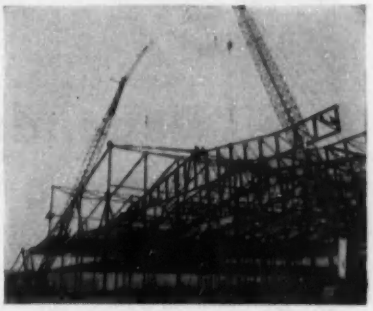
Welded Cantilevers 134′ long eliminate hanger columns

At New York International Airport, welded steel hangar cantilever trusses extend 134′ on either side of center frame.

Structural weight of *supporting* steel on this airport hangar weighs but 20 pounds per square foot. A comparative structure using bow string trusses spanning 140′ would weigh 21 pounds per square foot.

In addition to savings in steel, construction costs are further reduced by simpler finishing, less perimeter wall, etc.

Shop fabricated trusses were shipped in half sections, field assembled and hoisted by two traveler cranes. Each truss rests on 85′ ties from column 44′ above the roof.



Raising 134′ welded trusses in position for field erection by arc welding.

1294 ton welded framework at Idlewild Airport. Designed to house 5 large and 3 small transports. Designed by Port of New York Authority. Fabricators and Erectors, Lehigh Structural Steel Company.

THE LINCOLN ELECTRIC COMPANY

DEPT. 2306 • CLEVELAND 17, OHIO

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

THE JOHN D. McKEAN
World's largest Fire Boat

Manual Control

Electrical Remote Control

18,000 Gallons of Water Per Minute!

Six "New Yorker" Universal Monitor nozzles are aboard this "world's most modern fire boat." Each nozzle is capable of operating at a maximum water pressure of 340 lbs. per square inch with a nozzle capacity of 3,000 gallons per minute.

Five of these nozzles are mounted at strategic points throughout the boat and are easily hand operated horizontally and vertically by special gearing. The sixth is mounted in the fire tower and is operated by electrical remote control or manually. All are equipped with automatic safety controls.

Actually, the manufacturing of Monitor nozzles is nothing new to M. Greenberg's Sons. In celebrating their 100th Anniversary this year the records show that the first Monitor nozzles were manufactured by the firm as far back as the gold rush days when Monitor nozzles were used in placer mining. Today, the Greenberg Universal Monitor nozzle is an accepted symbol of quality and the extensive line is serving Municipal, Marine, Federal and State fire departments as well as general industry where fire protection is necessary.

"JUST OFF THE PRESS"
Our new 150-page GREENBERG Catalog "T" illustrating and describing the entire GREENBERG Line

BRONZE PRODUCTS by GREENBERG

M. GREENBERG'S SONS
765 Folsom Street
San Francisco 7, California

Our 100th Year

Offices in Principal Cities throughout the United States

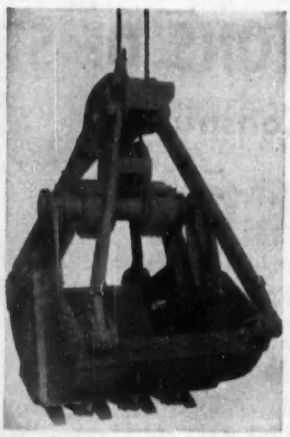
LOS ANGELES • PHOENIX • SEATTLE • PORTLAND
SPOKANE • SALT LAKE CITY • DENVER
KANSAS CITY • EL PASO • NEW YORK
HARTFORD • WASHINGTON, D. C.

Manufacturers of: bronze valves and fittings—Navy, maritime and industrial; "Underwriters' Approved" fire hydrants; Fire Protection brass goods, brass, bronze and aluminum plumbing and hardware specialties; bronze plaques for industry, and bronze memorials for cemeteries and mausoleums.

It All Depends on the BUCKET AT THE END OF THE LINE . . .

The bucket is usually less than one-tenth of the whole investment in your materials handling equipment. Yet, to get all the pay load you should on every pass depends more on the bucket than on anything else.

To be sure you have the right bucket for the job, let our field engineers look over your set-up. There's no charge, and their recommendations will help you get the most out of a major investment.



Write for BULLETIN 403, Dept. R-84

FORMERLY ERIE STEEL CONSTRUCTION COMPANY

ERIE STRAYER CO.

SAME PEOPLE • SAME PRODUCTS • JUST A NEW NAME

284 GEIST ROAD • ERIE, PENNSYLVANIA

Oliver Constr. Co., 1827 W. 145 St., Gardena, Calif., CA, $423,232, Plainview Ave. SCHOOL, Tujunga, LOS ANGELES, CALIF. Los Angeles Bd. of Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids July 23, awarded July 30. CD 10/5/53.

Hoefer Constr. Co., Box 425, Fontana, Calif., CA $520,000, elementary SCHOOLS, 11 and 12, ONTARIO, CALIF. Ontario Elementary School Dist., Ontario, Calif. Bids June 22, awarded July 20. CD 7/2, under LB.

Thomas Companies, 2486 Huntington Dr., San Marino, Calif., Owner Builds, $448,800. 66 frame, stucco DWELLINGS on Mesquite and Ocotillo Aves., PALMDALE, CALIF. Wm. M. Bray, 962 N. La Cienga Blvd., Los Angeles, archt.

▲ **Pomona Estates**, 6338 Wilshire Blvd., Los Angeles, Calif., Owner Builds, $1,768,000, 120 frame, stucco DWELLINGS on Baring and Ashton Aves., POMONA, CALIF. Palmer & Krisler, 6338 Wilshire Blvd., Los Angeles, archts.

Fleetwood Meadows Co., 549 San Vicente Blvd., Los Angeles, Calif., Owner Builds, $485,000. 63 frame, stucco DWELLINGS on Pritchard St. and Ivanel Ave., PUENTE, CALIF.

Hadley-Cherry Inc., 335 N. La Cienega St., Los Angeles, Calif., Owner Builds, $966,000, 138 frame, stucco DWELLINGS on Gale, Flagstone and Shadey Aves. PUENTE, CALIF. Rolland Russell, 621 S. Hope St., Los Angeles, archt.

▲ **Louis C. Dunn**, 3101 Wilshire Blvd., Los Angeles, Calif., LB $1,029,992. Upland High SCHOOL, UPLAND, CALIF. Chaffey Union High School Dist., Fifth and Euclid Sts., Ontario, Calif. Bids Aug. 2. CD 7/13.

Secrest & Fish, 1909 W. Whittier Blvd., Whittier, Calif., CA $550,114, two GYMNASIUMS at San Bernardino Senior High and Pacific High Schools, SAN BERNARDINO, CALIF. San Bernardino High School Dist., 799 "E" St., San Bernardino, Calif. Bids July 8, awarded July 22. CD 7/19, under LB.

Allison Honer Co., 312 N. Main St., Santa Ana, Calif., CA, $523,858, GYMNASIUM and SCIENCE bldg. combination, SANTA ANA, CALIF. Santa Ana School Dist., 1415 French St., Santa Ana, Calif. Bids Aug. 3, awarded Aug. 3. CD 7/19.

▲ **Louis C. Dunn**, 3101 Wilshire Blvd., Los Angeles, Calif., CA, $1,114,870, Upland High SCHOOL, UPLAND, CALIF. Chaffey Union High School Dist., Fifth and Euclid Sts., Ontario, Calif. Bids Aug. 2, awarded Aug. 2. CD 8/9, under LB.

CANADA

BIDS ASKED—BUILDINGS

▲ **Ont., Toronto**—CANCER CLINIC—BA 8/23—Toronto General Hospital, 101 College St., 7 story cancer clinic, Wellesley and Sherbourne Sts. connected to existing Wellesley Hospital, $5,500,000. Plans deposit $50, Allward & Gouinlock, 57 Bloor St. W., archts. Wallace, Carruthers & Assoc., Ltd., 35 Isabella St., engr. CD 10/5/51.

Que., Montreal—OFFICE—BA 9/29—Govt. of Canada, Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., 9 story, concrete, steel, brick, stone, office, St. Urbian St., $500,000. J. J. Perrault, 3737 Van Horne Ave., Montreal, archt. CD 9/29/53.

▲ **N. S., Dartmouth**—REFINERY—BA 10/25—Imperial Oil Ltd., 56 Church St., Toronto, Ont., refinery replacement on existing site. 3 mi. south of here. Est. $25,000,000-$30,000,000. George R. McMillin, sunt. R. W. Dunlop, mgr., c/o owner. CD 1/19, under Halifax, N. S.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

B. Perini & Sons Canada Ltd., 49 Jackes Ave., Toronto, Ont., LB $883,561, extension of Eglinton Ave. East 1.9 mi. from Don Mills Rd. to Victoria Park Ave., grav. culverts, clearing, bridge across Don River, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Foundation of Canada Engr. Corp., 200 Bloor St. E., Toronto, engr. for bridge. CD 11/25/53.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Christensen & MacDonald**, 612 Tegler Bldg., Edmonton, Alta. CA $6,269,269. 10 story, 130x282 ft. PUBLIC BLDG. 107 St. and 98 Ave., EDMONTON, ALTA. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids June 16, awarded July 28. CD 6/29, under LB.

Hamilton Constr. Co., Postal Station D, 662 Sherman Ave. S., Hamilton, Ont. CA est. $900,000. 100 rental HOUSING units, HAMILTON, ONT. Central Mortgage & Housing Corp., 40 Eglinton Ave., E., Toronto, Ont. Bids May 27, awarded July 28. CD 5/11.

Jackson-Lewis Co. Ltd., 80 King St. W., Toronto, Ont. CA est. $600,000. 4 story, bsmnt., 148x138 ft. steel, brick GARAGE incl. 5 rein.-con. slab floors, TORONTO, ONT. Granite Club, 63 St. Clair Ave. W., Toronto, Ont. Govan, Ferguson, Lindsay, Kaminker, Keenleyside, 515 Jarvis St., Toronto, Ont., archts. E. W. Willis, 1672 Bayview Ave., Toronto, Ont., engr. Awarded July 30.

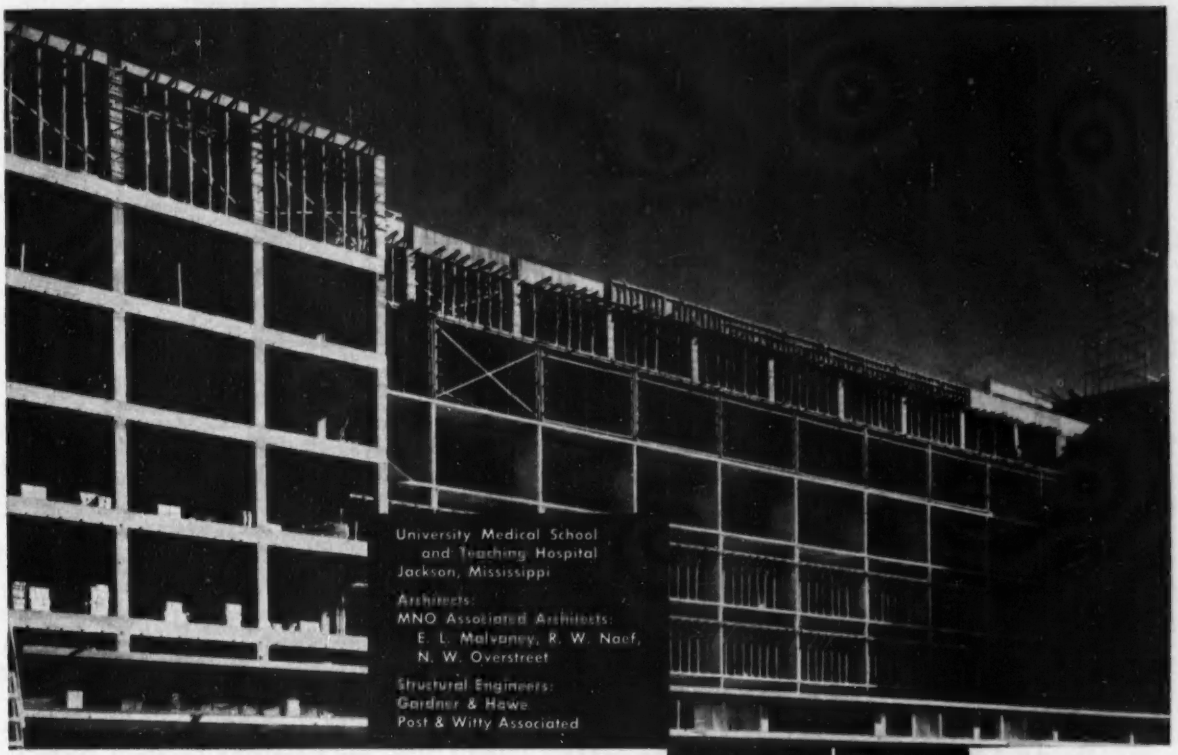
Dominion Bridge Co. Ltd., 1139 Shaw St., Toronto, Ont., CA, $650,000, steel fabrication and erection for various addnl. HOSPITAL bldgs., TORONTO, ONT. Toronto General Hospital, 101 College St., Toronto, Ont. Bids July 15, awarded Aug. 3. CD 7/6.

Hill-Clark-Francis Ltd., 7 9 St., Noranda, Que., CA, $500,000, HOUSING development, CHIBOUGAMAU, QUE. Campbell Mines, Ltd., 625 W. Dorchester St., Montreal, Que.

For this $8,000,000 medical school and hospital, Mr. N. W. Overstreet, one of the architects, writes, "No other systems were considered, because we know that reinforced concrete is less expensive and better." Mr. H. N. Howe, the structural engineer, adds, "Numerous studies over a period of years have invariably shown that a reinforced concrete frame is more economical for fireproof buildings of light occupancy."

On this job, as on jobs over the entire country, reinforced concrete gives a better structure for less money—and materials are always readily available for quick starts. It's a flexible medium, too, inherently firesafe, and highly resistant to shock. On your next job, design for reinforced concrete.

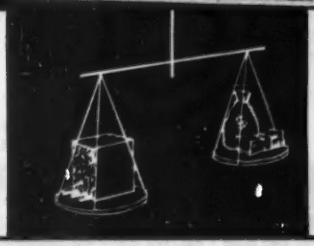
"we know that REINFORCED CONCRETE is less expensive and better"



University Medical School and Teaching Hospital
Jackson, Mississippi

Architects:
MNO Associated Architects:
E. L. Malvaney, R. W. Naef, N. W. Overstreet

Structural Engineers:
Gardner & Howe
Post & Witty Associated



Compare...

YOU'LL SAVE WITH REINFORCED CONCRETE

38 South Dearborn Street • Chicago 3, Illinois

CONCRETE REINFORCING STEEL INSTITUTE

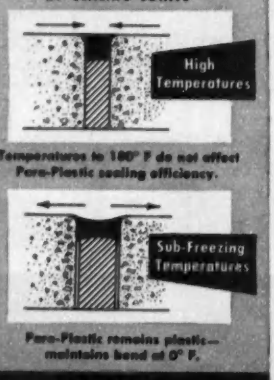
STOP JOINT SEAL FAILURES!

Use HOT-POURED *Para Plastic*

- *Para-Plastic keeps joints sealed under severest conditions of traffic, temperature*
- *May be pumped directly into joint from melting kettle*
- *Para-Plastic "JF" compound impervious to Jet Fuel or petroleum solvents used in aircraft*

Use Hot Poured Para-Plastic . . . field-proved to be the only effective method of sealing joints with a high degree of permanence. There's no substitute for Para-Plastic . . . nothing equals its sealing performance. It's stable, constant in volume, won't break down and maintains bond under virtually every condition. Para-Plastic can now be pumped directly into the joint from the melting kettle—a fast, simple method of application. Write for details on new method and information on Para-Plastic and Para-Plastic JF.

The only FIELD PROVED METHOD OF SEALING JOINTS



Temperatures to 180° F do not affect Para-Plastic sealing efficiency.

Para-Plastic remains plastic—maintains bond at 0° F.

SERVICISED PRODUCTS CORPORATION
6051 WEST 65th STREET • CHICAGO 38, ILLINOIS

T-CHORD LONG SPAN STEEL JOISTS give greater plan freedom

GRAND HAVEN SENIOR HIGH SCHOOL, GRAND HAVEN, MICH. ARCHITECT: WARREN S. HOLMES

You plan better, freer and for lower cost per square foot with Haven-Busch T-Chord steel joists. Framing is simpler, stronger, faster . . . with lighter columns and footings. Enclosed joist areas permit wide latitude for lighting, ducting, ventilating, insulating or sound-proofing. Our engineers will welcome the opportunity to help you.

See Sweet's Architectural, Sweet's Industrial Files, #2CHA

STRUCTURAL STEEL • MISCELLANEOUS IRON
T-CHORD LONG SPAN JOISTS • ORNAMENTAL IRON

HAVEN-BUSCH COMPANY

501 Front Ave., N.W. Phone 9-4173 Grand Rapids, Michigan

E. Lamarre, 200 St. John St., Jonquiere, Que., CA, $500,000. 2 story 98x143 ft., concrete, steel, brick HOTEL, JONQUIERE, QUE. U. Villeneuve, 192 St. Luke St., Jonquiere, Que. Lamontagne, & Gravel, 365 Racine St., Chicoutimi, Que., archts. CD 11/17/52.

Fernand J. La Bronse Inc., 44 Port Royal Ave., Montreal, Que., LB, $474,750, NOVITIATE ADDN., Maison Provinciale LAPRAIRE, QUE. Les Freres de L'Instruction, Chretienne, Lapraire, Que. R. Dumais, 3995 Sherbrooke St. E., Montreal, archt.

▲ S. D. Miller & Sons, 6909 Cote des Neiges Rd., Montreal, Que., CA Approx. $50,000,000. 4,000 HOMES at Beaugrand St., incl. apartments, schools, parks, etc., MONTREAL, QUE. Owner c/o contractor. Eliasoph & Berkowitz, 6931 Cote des Neiges Rd., Montreal, Que. archts.

Proposed Projects

WATER SUPPLY

Mo., Joplin—City, Water Works Co., Joplin, imprv. to water distr., $485,000.

▲ Mo., Kansas City—City, City Hall, voted $7,500,000 bonds Aug. 3, water supply imprvs. CD 11/7/52.

N. J., Westville—Westville, Boro, water storage tank, $130,000. Charles P. Caulfield, 61 S. Broadway, Pitman, N. J., consult. engr.

▲ O., Batavia—Clermont Co. Comrs., Court House, Batavia, water sys. for Batavia, Pierce and Union Twp. with water coming from wells near Ohio River. $2,400,000. Alfred LeFeber & Assocs., 2933 Woodburn St., Cincinnati, Zone 6, consult. engrs.

Tex., San Antonio—City Water Bd., 106 W. Market St. 1½ mil. gal. elevated steel water storage tank, north of Vance-Jackson and Jackson-Keller Rds. $75,000; some new c.i. water mains off Vance-Jackson Rd. $40,000; laying c.i. water header mains, north side Dellview's Area, $45,000.

Wis., Appleton—City, City Hall, expanding water system, pumps, filters, pipe lines, and watermains $685,000. Alvord, Burdick & Howson, 20 N. Wacker Dr., Chicago, Ill., consult. engrs.

Ont., Brooklin—Whitby Twp., Municipal Office, Brooklin, 24,500 ft. 12 in. water main, 5 mi. between Brooklin and Whitby, water pumping station, elevated water tank, $300,000. Gore & Storrie, 1130 Bay St., Toronto, consult. engrs.

Que., Joliette—Municipality, filtration plant reconditioning, $300,000. G. Piette, le Place d'Aiguillon, Quebec City, engr. CD 3/12.

Que., Port Alfred—Municipality, reconstr WW., $125,000. Surveyor & Assocs.,1440 W. Ste. Catherine St., Montreal, consult. engrs.

SEWERS, WASTE DISPOSAL

Conn., New Haven—City, Richard C. Lee, mayor, City Hall, exten. sewerage sys. along East Shore to complete major installations, $350,000. CD 1/5/45.

▲ Conn., Stamford—City, T. J. Quigley, mayor, City Hall, sewerage sys., $3,000,000. Keis & Holroyd, 257 Broadway, Troy, N. Y., consult engrs. CD 2/3/47.

Conn., West Hartford—Town, R. L. Loomis, town mgr., Town Hall, incinerator, $100,000, Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., consult. engrs.

Ind., Garrett—Bd. of P. Wks., F. L. Fleick, chn. sewage treatment plant and sewerage sys., $300,000. Boyd & Phelps Inc., 1000 Washington St., Michigan City, consult. engr. CD 11/8/51.

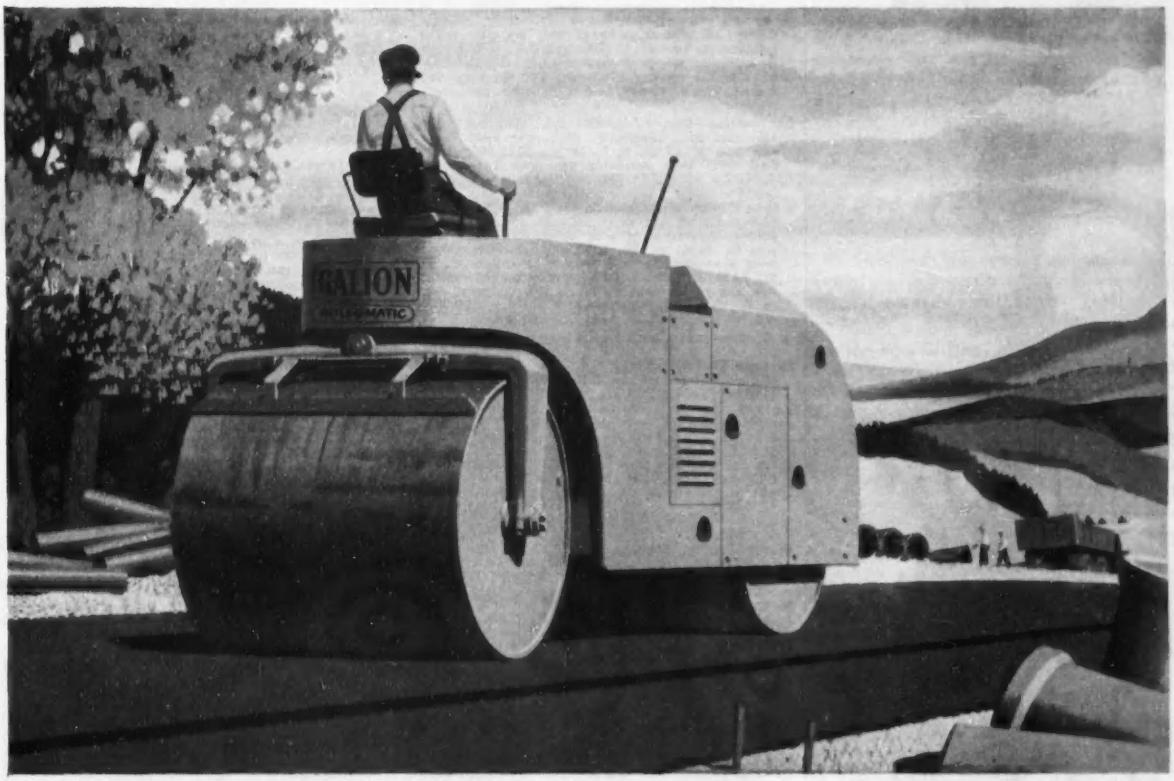
▲ Ind., Indianapolis—Bd. Sanitary Comnrs., C. Drayer, chn. City Hall, interceptor sewers incl. (1) Fall Creek Interceptor extrusions to Meridian Hills and Berndenwood, $3,000,000; (2) Belmont interceptor (Northern Branch) Belmont and 16 St. to Rocky Ripple, $2,350,000; (3) Belmont Interceptor (Western Branch) Belmont and 16 to 30 St. and U. S. Rd. 52 at Flackville, $540,000; (4) Adler, McCarty Relief Interceptor, Michael and McCarty Sts. south to Southern and on to sanitation plant; (5) Pogue's Run Relief Interceptor (Emerson Branch) from Michigan & Dorman Sts., N. E. to 30 St. and Emerson Ave., $2,070,000; (6) Pogue's Run Relief Interceptor (E. Branch) from Arlington Ave. and Pleasant Run Blvd. East to 10 St. and Post Rd., $720,000. (7) Lick Creek Interceptor from Sanitation Plant, S. E. to Southport, $4,500,000. Moore & Heger, 810 N. New Jersey St., Indianapolis, Zone 4, consult. engrs. CD 6/8/53.

Mich., Flint—City, Harry K. Cull, clk., storm sewers in Fleming-Pierson-Clio Sts.; relief sewer Gracelawn Ave. from Summit to Verdun Sts.; electrically operated pumping station Proctor St. $192,580, Ayres, Lewis, Norris & May, 500 Wolverine Bldg., Ann Arbor, consult. engrs. CD 11/27/50.

▲ Minn., St. Louis Park—Village, J. Justad, clk., storm sewer projects, (1) $1,000,000 (2) $113,000 (3) $700,000 (4) $600,000, P. W. Smith, village engr. CD 9/16/52.

Mo., California—City, defeated $422,000 bonds July 20, sewerage sys. imprvs. Hagler & Co., Rolla, consult. engrs.

Mo., Grandview—City, voted $750,000 bonds, sewage plant, laterals, mains. Haskins, Riddle & Sharp, Finance Bldg., Kansas City, Mo., consult. engrs. CD 6/30.



NEW GALION ROLL-O-MATIC WITH TORQMATIC CONVERTER

rolls 10% more surface per day

GALION — one of the world's largest manufacturers of road rollers—now offers four new gasoline-powered ROLL-O-MATIC tandem rollers equipped with Allison TORQMATIC Converters.

This efficient combination torque converter and fluid coupling makes ROLL-O-MATIC simpler to operate. It eliminates the master clutch. There are no gears to shift.

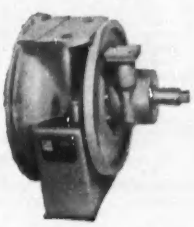
ROLL-O-MATIC rolls smoother in either direction. With the governor directly on the tailshaft it has quicker pickup —takes guesswork out of reversing. Rolling speed is automatically maintained up hill—on the level—down hill and on curves, by means of the combination of the TORQMATIC Converter and tailshaft governor.

The maker reports the operation is so smooth that at least 10% more surface can be rolled per day. And fuel consumption is reduced as much as 25%.

The applications of Allison TORQMATIC Converters are broadening rapidly. With units in a new range from 40 to 150 horsepower to fit both gasoline- or Diesel-powered engines, more than likely you, too, can gain the many moneysaving benefits of this drive. The completely *self-contained* converters are compact, easy to install and surprisingly low in price.

Check your equipment manufacturer or dealer or write us for full particulars.

ALLISON DIVISION OF GENERAL MOTORS
Box 894E, Indianapolis 6, Indiana



GM GENERAL MOTORS

Allison

TORQMATIC DRIVES

whatever your publication needs...

Equipment Manuals — Product Catalogs — Handbooks — Training Aids — Industrial Relations Literature — Procedural Guides — Engineering Presentations — — — and any type of technical literature

use our specialists in — — —
WRITING . . . EDITING
ILLUSTRATING . . . PRINTING

McGRAW-HILL
Technical Writing Service*
330 West 42nd St., N.Y.C. 36
LOngacre 4-3000

▲ **N. Y., Yonkers**—Westchester Co. Bldg. Supvrs., County Court House, White Plains, proposals to be submitted to voters in November 2 election if project is approved. sewage treatment plant, $12,000,000-$15,000,000. Greeley & Hansen, 220 S. State St., Chicago 4, Ill. consult. engrs. to make preliminary recommendations.

O., Cleveland—City, P. Utilities Dpt., Emil J. Crown, dir., City Hall, combination flood relief sewer Cedar Ave. from E. 65 St. to E. 79 St., $121,000; storm flood relief sewer Invermere Ave. from Lee Rd. to Strandhill Rd., $265,000; combination flood relief sewer St. Clair Ave. from Marquette St to E. 45 Sts., $140,000; combination flood relief sewer St. Clair Ave. from Nottingham Rd. to E. 176 St., $308,000; storm flood relief sewer Spring Rd. from Broadview Rd. to W. 12 St., $150,000; combination flood relief sewer Superior Ave. from E. 45 St. to E. 55 St., $130,000; combination flood relief sewer Woodland Ave. and 79 St. from E. 79 St. and Woodland Ave. to E. 83 St. and Nickel Plate R. R., $120,000, Geo. W. Hamlin, utilities engr. dir. CD 5/27.

▲ **O., Cleveland**—City, Dpt. P. Utilities, Emil J. Crown, Dir.

Cuyahoga River Intercepting Sewer (sanitary) 4,975 ft. on Independence Rd. from Dille Ave. to Stillson Ave., $130,000.

2,655 ft. open cut, 1,800 ft. tunnel on Broadway, Independence Rd. and Dille Ave. extending from Standard Oil Co.'s No. 1 Works to Dille Ave. Sewage Pumping Station. $130,000.

2,400 ft. on Track Ave., Martin St., Broadway and Dille Ave. extending from intercepting sewer at E. 49 St. to Dille Ave. Sewage Pumping Station, $250,000.

3,760 ft. from Big Creek at Jennings Rd. to Belt Line St., $78,000.

Sewage Pumping Stations:

Superior Ave. and Cuyahoga River and outlet sewer in Superior Ave. to W. 9 St. sanitary (800 ft.), $100,000.

sewage pumping station and discharge line at Dille Ave. (330 ft.) sanitary, $78,000.

sewage pumping station, Front St. and Cuyahoga River and outlet sewer in Front St. and W. 9 St. to intercepting sewer at Lakeside Ave. (2,000 ft. with 1 sewage regulator), $65,000.

Storm Flood Relief Sewers:

Kingsbury Run from Sidaway Ave. to E. 79 St. $175,000, Kingsbury Run Sect. 2 from E. 37 to E. 49 Sts., $530,000.

Kingsbury Run Sect. 3, from E. 49 to Sedaway Ave. $680,000.

Combined Flood Relief Sewer:

Corlett Ave. from E. 116 to E. 127 Sts. $196,000. George W. Hamlin, c/o owner, utilities engr. comr. CD 11/7/52.

O., Cleveland—City, P. Utilities Dpt., Emil J. Crown, Dir. City Hall,

Combined Flood Relief Sewers. Liberty Ave. and Brookside Blvd. from W. 130 St. and Liberty Ave. to Brookside Blvd. and Terminal Ave. $130,000. Sandusky Ave. relief sewer, $200,000. Scranton Rd. from Kenilworth Ave. to Trowbridge Ave. $150,000. E. 70th St. from Hough to Euclid Aves. $122,000. E. 90 St. from Euclid to Cedar Aves. and Cedar Ave. from E. 90 to E. 93 Sts., and E. 93 St. from Cedar to Quincy Aves. $240,000. E. 97 St. from Lamont to Euclid Aves. $62,000. W. 7th St. from Railway to Mary Aves. $100,000. George W. Hamlin, c/o owner, utilities engr. comr. CD 12/13/43.

O., Greenfield—Village, $275,000 bond election November 2, storm and sanitary sewers, $275,000.

▲ **Pa., Springdale**—Joint Boro of Springdale and Harmar Twp., Cheswick, sewage plant and sewers, $1,000,000. Chester Engrs., 210 E. Park Way, Pittsburgh, consult. engrs. CD 10/25/51.

Tex., Corpus Christi—Nueces Investment Corp., S. Staples St., sanitary sewer collection lines, $62,500; storm sewers, $60,000, 110-acre tract off 4000 Blk. Staples St.

Tex., Dallas—Centex Constr. Co., 4911 Greenville St., sanitary sewers, $65,000; storm sewers, $65,000; Sect 2 extens. Country Club Park Addn.

Tex., Houston—Centex Constr. Co., 3900 Greenville St., Dallas, sanitary sewers, $65,000; storm sewers, $65,000 for Second Section off Freeway in area Pasadena Tunnel.

Tex., Houston—Clark W. Henry & Assocs., 2054 Richmond St., sanitary sewers, $75,000; storm sewers, $75,000 and extens. Jersey Village off Hempstead Rd. J. B. Dannenbaum, 3940 Main St., consult. engr.

Tex., Houston—C. E. King, c/o King Const. Co., 411 W. 11 St, sanitary sewers, $70,000; storm sewers, $65,000 in 526 acre tract between Houston and Lake Houston in Victor Blanco Survey.

Tex., San Antonio—Community Developers of San Antonio, Inc., Gunter Bldg., storm sewers and some open drainage, $60,000; sanitary sewer lines, $61,500, northeast of intersection Bancock Rd. and Hillcrest Dr.

Utah, Salt Lake City—Salt Lake City Corp., Roy W. McLeese, City-County Bldg., connection of sewage pumping plant to sewage sys. $546,000. Clyde C. Kennedy 604 Mission St., San Francisco, Calif., consult. engr. CD 9/21/53.

▲ **Wash., Hoquiam**—City, City Hall, storm sewers for low areas of city, $325,000; main trunk lines and pumping stations, $660,500; trunk lines, pumping station and laterals to low areas, $72,200; replacement of present sewers with trunk lines, pumping station and laterals, $923,900; sewage lagoon, $360,000, C. E. Green, Henry Bldg., Portland, Ore., consult. engr.

Wis., Menasha—Neenah-Menasha Sewerage Comn., 427 9 St., Neenah, enlarging incinerator and sewage plant, $500,000. McMahon Engrg. Co., Menasha, consult. engr. CD 10/13/53.

BRIDGES

CONNECTICUT—State of Connecticut, G. Albert Hill, Comr., State Office Bldg., Hartford,

Saugatuck—bridges and approaches, incl. 4 grade separations, 0.8 miles, $150,000. Hardesty & Hanover, 101 Park Ave., New York, N. Y., consult. engrs.

Wis., Two Rivers—City, City Hall, bridge over West Twin River, $650,000. Hazelet & Erdal, 53 W. Jackson St., Chicago, Ill., consult. engrs.

STREETS AND ROADS

ARIZONA—State Hy. Comn., 17 Ave. and Jackson St., Phoenix,

Gila Co.—Beeline Hy. Payson to **Phoenix, $400,000.**

▲ **CONNECTICUT**—State of Connecticut, G. A. Hill, Hy. Comr. State Office Bldg., Hartford,

Branford—highway, 11 grade separations Featherbed Lane area to a point 300 ft. east of Marsh Rd., Guilford, $500,000. Westcott & Mapes, Inc., 109 Church St., New Haven, consult. engr.

Bridgeport—highway 1.7 mi., 5 grade separations, 3 viaducts, State Street Extension to west edge of Myrtle Ave. $250,000. Edward Kelcey & Beck, 3 Williams St., Newark, N. J., consult. engrs.

Highway, and bridge 2.6 mi. 12 grade separations bridge over Yellow Mill River, from west edge of Pembroke St. to south edge of Stratford Ave., Stratford $300,000. E. Lionel Pavlo, 7 East 47 St., New York, N. Y., consult. engr.

highway 1 mi., 5 grade separations, bridge over Pequonnock River, west edge of Myrtle Ave. to west edge of Pembroke St. Structure, $250,000. Ammann & Whitney, 76 9th Ave., New York, N. Y., consult. engrs. CD 5/27/49.

Cos Cob—highway 1.6 mi., 3 grade separations bridge over Mianus River, to point 200 ft., west of Sound Beach Ave., Greenwich, $300,000. Knappen-Tippetts-Abbett-McCarthy, 62 W. 47 St., New York, N. Y., consult. engrs.

Fairfield—highway 4 mi. 17 grade separations 2 stream crossings, Mill Rd. Vicinity to 300 ft. northwesterly from State St. Extension in Bridgeport, $400,000. Porter Urquhart & Beavin, 415 Freylinghysen Ave., Newark, N. J., consult. engrs.

highway 4.5 mi., 10 grade separations, one stream crossing, Compo Rd. area to point 300 ft. west of Mill Hill Rd., $350,000. H. W. Lochner & Co., 150 N. Wacker St., Chicago, Ill., consult. engrs.

Greenwich—highway 4.1 mi., 10 grade separations, one viaduct, 2 bridges over streams, East Abutment of Byram River Bridge and a point 300 ft. north of railroad, Cos Cob, $500,000. Gannett-Fleming-Coddrey & Carpenter, Inc., 600 North 2 St., Harrisburg, Pa., consult. engr.

Guilford—highway 11.3 mi., Marsh Rd., area, a point 200 ft. west of Conn. Rte. 153, grade separation at Westbrook, incl. 14 grade separations, 1 viaduct, and 3 river structures, $1,000,000. Capitol Engrg. Corp., Dillsburg, Pa., consult. engrs.

Lisbon—highway 7 miles, between Lisbon and a point 200 ft. north of Lathrop Rd. in Plainfield, incl. 11 grade separations, 2 river crossings, $700,000. F. P. Molloy, 32 Castilles Rd., West Hartford, consult. engr.

Milford—highway 5.6 mi. East side of Boston Post Rd. to a point 300 ft. west of Campbell Ave., West Haven, $500,000. Charles H. Sells, 70 E. 45 St., New York, N. Y.. consult. engr.

New Haven—highway 5.9 mi. New Haven-East Haven Line to a point 200 ft. west of Featherbed Lane, Branford incl. 14 separations, 2 river crossings and the Branford connector, $500,000. Seelye-Stevenson-Value-Knecht, 101 Park Ave., New York, N. Y., consult. engrs.

highway 1.8 mi. incl. Quinnipac River Bridge between Canal dock area and west side of Stiles St., 3 grade separations, $250,000. D. B. Steinman, 117 Liberty St., New York, N. Y., consult. engr.

Norwalk—highway 6.5 mi., 11 grade separations 1 viaduct, Norwalk River Bridge, 1 stream crossing, West abutment of U. S. Bridge 1, Darien to a point 300 ft. west of Saugatuck Ave., $600,000.

Norwich—highway 8.2 mi., 11 grade crossings 1 viaduct, Central Vermont R.R., $800,000. William H. McFarland, 333 Front St., Binghamton, N. Y., consult. engr.

highway 7.1 mi., 8 grade separations, 2 river structures, 100 ft. west of Conn. Rte. 12, Lisbon, $700,000. John J. Mozzochi, 343 New London Turnpike, Glastonbury, consult. engr. CD 4/3/50.

Plainfield—highway 6.8 mi. between Lathrop Rd. area and a point 500 ft. north of Junction of Killingly, 3 grade separations, 1 viaduct, 1 river structure, $600,000. Thomas Worcester, Inc., 85 State St., Boston, Mass., consult. engr.

highway 5.1 mi. Plainfield Junction thru Killingly to Rhode Island State Line, 6 grade separations, $400,000. Loomis & Sullivan, 641 Farmington Ave., Hartford, consult. engrs.

Stamford—highway 3 mi., 9 grade separations, 2 stream crossings, Myrtle Ave. are to West abutment U. S. Rte. 1 Bridge, Darien, $350,000. Frank L. Ehasz, 730 5 Ave., New York, N. Y., consult. engr.

Stratford—highway 4.3 mi., 12 grade separations, 1 viaduct, 1 stream crossing, east end of Housatonic

Whatever your requirements the combination is here!

Regardless of your requirements—Schramm, Inc., can furnish a complete air compressor combination for your job... in various sizes and mountings with all necessary tools and accessories.

1. Portable Engine driven compressors in sizes: 20-35-60-105-210-315 and 600-c.f.m.

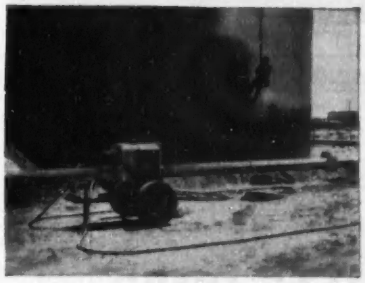
SCHRAMM COMPRESSORS AND TOOLS!

600-CU. FT. SCHRAMM DIESEL ENGINE DRIVEN COMPRESSOR.

2. Two and four wheel mountings for towing, skidded outfits for truck mounting and self-propelled units.

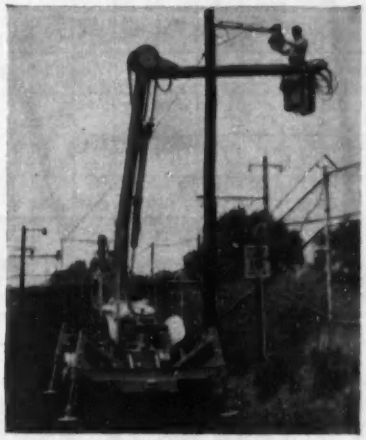
3. Combinations with all the necessary tools for: Rock Drilling... Paving Breaking... Demolition Work... Mud-Jacking... Stake and Post Driving... Trench Digging... Backfill Tamping... Chain and Circular Saws... Pile Driving... Concrete Vibrators... Line Oilers... Manifolds... Air Hose and Couplings.

WRITE DEPARTMENT HW.

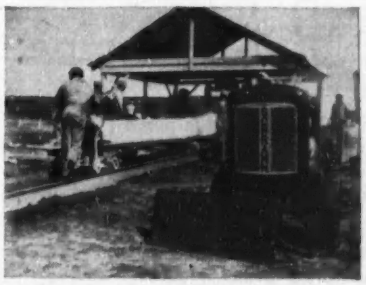


1. Model 20-c. f. m. operating paint spray for painting steel tank.

2. Model 35-c. f. m. operating demolition tool for removing concrete base.



3. Schramm Pneumatractor with Sky-Worker solves overhead problems.



4. Model 60-c. f. m. furnishing air for paint sprays coating 65 mile of 20" pipe.

5. 105-c. f. m. Pneumapower providing air for backfill tampers.

6. 105-c. f. m. Unistage operating riveting hammers on steel erection job.

7. 315-c. f. m. operating three heavy duty rock excavating tools preparing new foundation.

8. 600-c. f. m. diesel engine drive operating two WDR-126 Schramm Wagon Drills.

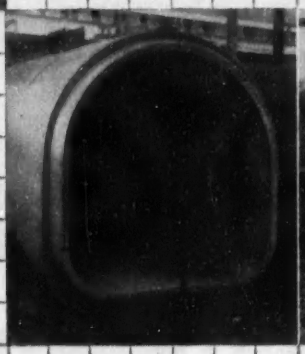
SCHRAMM, INC.

The Compressor People

WEST CHESTER • PENNSYLVANIA

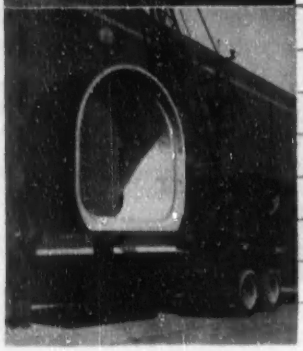
highways

railroads



flatten your COST curve with UNIVERSAL *Flat-base pipe*

industry



conduits

Pre-cast concrete pipe saves you up to 30% over built-in-place construction methods. Easy handling and installation reduce labor costs, eliminate forms, reinforcing, concrete pouring and curing. **Up to 100 feet of UNIVERSAL Flat-base pipe can be laid and covered in one day!**

Built to withstand heavy traffic impact and high overburdens, Flat-base pipe has high corrosion-resistance even in severe climates and soils. Interior walls are smooth, with tight-fitting joints. For any job — culvert, underpass, conduit, industrial tunnel — rugged Flat-base pipe cuts costs through speedy installation, long life, low maintenance.

Flatten *your* cost curve. Uncover new profits in concrete construction. Specify UNIVERSAL Flat-base concrete pipe.

Write for complete information on the many uses of UNIVERSAL Flat-base pipe.

THE UNIVERSAL CONCRETE PIPE COMPANY

297 s. high st., columbus 15, ohio

A SUBSIDIARY OF THE AMERICAN-MARIETTA CO.

River Bridge to east end of the Boston Post Rd. Milford, $400,000.
highway 2.3 mi., 7 grade separations, 1 viaduct south edge of Stratford Ave. to east side of Naugatuck Ave. $250,000. Parsons-Brinkerhoff-Hall & Macdonald, 51 Broadway, New York, N. Y., consult. engrs.
Waterford—highway 9.1 mi. incl. addnl. lanes and 8 structures to raise Blue Star Highway to expressway status, Baldwin Bridge to Oil Mill Brook, $1,000,000.
highway, 5.2 mi. Oil Mill Brook to a point 500 ft. south on Montville Connector, $300,000. Newman E. Argraves & Assocs., 70 College St., New Haven, consult. engrs.
West Haven—highway 2.6 mi., 5 stream crossings, Campbell Ave. area to a point south of Canal Dock, New Haven Bridge on the west river, $300,000.

MASSACHUSETTS—Commonwealth of Mass., Metropolitan Dit. Comn., Parks Div., 20 Somerset St., Boston,
Boston—Storrow Memorial Drive along Charles River to be wid'n. from 2 to 3 lanes each way, $450,000. CD 10/9/52.

▲ **Mo., Kansas City**—City, City Hall, voted $19,500,000 bonds Aug. 3, trafficway and boulevard. CD 6/28.

▲ **Pa., Erie**—City, City Hall, bond election November 2, street imprvs. $2,000,000.

Tex., Abilene—City, City Hall, voted bonds July 17, permanent type paving streets, $500,000; streets rehabilitation, mostly repairing, graveling, $350,000. CD 7/26.

Tex., Port Lavaca—Calhoun Co. Rd. Dist. 1, Port Lavaca, voted bonds July 24, roads. $300,000. CD 6/28.

Wash., Tacoma—City, City Hall, $960,000 bond election Nov. 2, street imprvs. CD 7/1.

QUEBEC—Prov. Dpt. of Roads, and Canadian International Paper Co. Ltd., Three Rivers,
Quebec City—road on Route La Croache-La Trenche, $125,000. E. Gohier, c/o owner, engr.

EARTHWORK, WATERWAYS

Calif., Fair Oaks—Fair Oaks Irrigation Dist., $300,000 bond election Aug. 24, pipe replacement for dist.

Tex., Abilene—City, City Hall, voted bonds July 17, open drainage streets, $150,000. CD 7/26.

AIRPORTS

▲† **Colo., Colorado Springs**—AIR FORCE ACADEMY—Dpt. of Air Force, The Pentagon, Wash., D. C., air force academy, $126,000,000. Skidmore, Owings & Merrill, 575 Madison Ave., New York, N. Y., Syska & Hennessy, 144 E. 39 St., New Cork, N. Y., Moran, Proctor, Mueser & Rutledge, 420 Lexington Ave., New York, Zone 17, Roberts & Co., 96 Poplar St., N. W., Atlanta, Ga., Wallace K. Harrison, 45 Rockefeller Plaza, New York, N. Y., Eero Saarinen, W. Long Lake Rd., Bloomfield, Mich. and Welton Becket, 5657 Wilshire Blvd., Los Angeles, Calif., consult. engrs.-archts. temporary facilities for the Air Force Academy at Lowry Air Force Base, $1,300,000. Wilson & Co., 20 E. 9 Ave., Denver, Colo., consult. engr.-archts. CD 6/29.

▲ **Mo., Kansas City**—AIRPORT IMPRVS.—City, City Hall, voted $8,500,000 bonds Aug. 3, International Airport imprvs. CD 6/28.

▲† **Neb., Lincoln**—AIR BASE—U. S. Eng., 1709 Jackson St., Omaha, airfield pavement, $2,193,000; barracks and officers quarters, $1,224,000; communications and navigational aids. $23,000; operational facilities. $160,000; shop facilities, $32,000; aircraft maint. facilities, $271,000; training facilities, $137,000; utilities, $21,000; medical facilities, $109,000; storage facilities, $243,000; administrative facilities, $178,000 at Lincoln Air Force Base. CD 7/17/52.

† **O., Youngstown**—WAREHOUSE, SHOP—U. S. Eng., 237 Fourth Ave., Huntington, W. Va., 10,000 sq. ft. warehouse and mechanical repair shop, paving fuel storage, dispensing facilities, etc., Air Force Base at Youngstown Municipal Airport. $687,000.

▲† **Tex., Matagorda**—AIR FORCE RANGE—U. S. Eng., Box 1229, Galveston, design of Air Force Range, Matagorda Island, $607,000 appropriated. Total $5,000,000. Stone & Pitts and Carter & Burgess, 1872 Calder Ave., Beaumont, consult. engrs.-archts.

▲† **Tex., San Antonio**—TROOP HOUSING—U. S. Eng., 606 Santa Fe Bldg., Galveston, troop housing, Brook Medical Hospital Center, $1,129,000. CD 4/30/52.

▲† **Alaska, Naknek**—HANGAR, etc.—U. S. Eng., Anchorage, alert hangar, $1,000,000; bulk jet gas and diesel (above ground), $500,000; crash station, utilities. $100,000; automotive shop addn. $100,000.

PUBLIC BUILDINGS

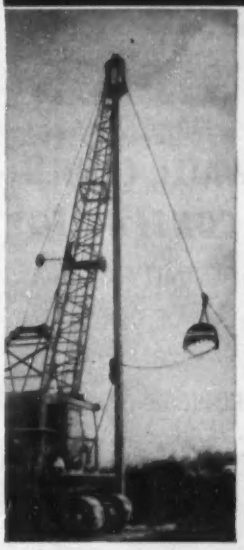
Calif., Castro Valley—SCHOOL—Castro Valley Elementary School Dist., 6600 Christensen Lane, plans by Wm. Corlett, 347 Clay St., San Francisco, Center Street School, $400,000. CD 10/8/52.

Calif., Monterey—SCHOOL—Monterey City School Dist., Box 1031, plans by Wm. D. Concolino and Geo. L. Willox, 588 Houston St., school in Ord Terrace area, Seaside, $400.000. CD 2/4.

Calif., Mountain View—SCHOOL—Whisman Elementary School Dist., 1895 Stierlin Rd., plans by John Carl Warnecke, 507 Howard St., San Francisco, Whisman School No. 5, $300,000. CD 7/30/51.

"We Didn't Build a Bridge, We Moved a River"...

A. S. Wikstrom, Inc.



One Sauerman Scraper helped by spreading 200 cu. yds. of muck per hour

Spreading 260,000 cu. yds. of plastic material as excavation progressed in the rechanneling of the winding Clyde River was one of the jobs done by A. S. Wikstrom, Inc. in the Thruway construction near Seneca Falls, New York.

A 6-cu. yd. Sauerman Crescent Scraper, equipped with carrier and track cable, working from a 1½-cu. yd. crane handled the job at the rate of 200 cu. yds. per hr. Length of haul was about 300 ft. An Athey Wagon served as an anchor for the track cable and provided the necessary mobility. A spud was used to support the boom and also allowed the operator to take advantage of almost the full boom height for fast gravity return of the scraper to digging point.

This set-up supplanted an earlier recasting arrangement using several machines. It operated at a considerable savings over previous cost.

For more details on the Clyde River project ask for Sauerman News No. 139. Request Field Report 219 and Catalog J. for specific information on the use of scrapers with boom machines. Sauerman engineers will tell you the largest Crescent scraper your dragline or tractor can handle, if you will give us the make and model number of your machine.

SAUERMAN BROS., Inc.
532 S. Clinton Street, Chicago 7, Illinois

What Do You Need of STEEL!

Delivery of just the steel you need can usually be made from FLINT's stock. GALVANIZED and STRUCTURAL STEEL and WAREHOUSE STEEL. Order steel for heavy construction jobs, petroleum processing or chemical equipment, or warehouse steel in the quantity you need . . . and get prompt delivery from FLINT. Phone, write or wire.

A Complete Service: STEEL • FABRICATION • ERECTION • DETAILING

Serving Southwest Industry Since 1915

FLINT STEEL
FLINT STEEL CORPORATION
TULSA • MEMPHIS

PLASTIMENT* CONCRETE DENSIFIER

CONTROLS SET AND REDUCES WATER CONTENT *WITHOUT CHANGING AIR CONTENT* FOR

- GREATER UNIFORMITY
- CRACK RESISTANCE
- WATER RESISTANCE
- SURFACE HARDNESS

*Plastiment consistently produces higher structural values in concrete because it limits and controls the growth of water-consuming cement gels during mixing and placing of concrete. This action reduces the water-cement ratio and retards the set of all concretes, plain or air-entrained, regardless of type of cement or aggregate. Uniformity of set and water content (the governing factors of uniform concrete quality) are made possible by changing Plastiment proportions with concrete-placing-temperatures and field conditions.

Controlled set and uniformly low water content—exclusive with Plastiment—means less segregation, shrinkage, cold joints and other defects, greater uniformity and resistance to abrasion, cracking and leakage.

Write for your copy of "Plastiment Concrete Densifier" booklet and the Sika Job Bulletin describing the job at right.➔

11 APARTMENT HOUSES AT PARKMERCED, SAN FRANCISCO
REINFORCED CONCRETE WITH PLASTIMENT

For details on the above project, write for "SIKA JOB BULLETIN #8."

SIKA CHEMICAL CORPORATION
PASSAIC, NEW JERSEY
BRANCH OFFICES: PITTSBURGH, SALT LAKE CITY, MONTREAL, CHICAGO, PANAMA • DEALERS IN PRINCIPAL CITIES

SURVEYOR STAKES

HIGH GRADE HARDWOOD

Stained Yellow Bound with Steel Strapping

		Per 100	In 1000 Lots Per 100
2x2	12"	$ 7.85	$ 7.15
	15"	9.85	8.95
	18"	11.50	10.50
	24"	16.00	14.50
	36"	24.00	22.50
1x2	12"	6.15	5.60
	15"	6.60	6.00
	18"	7.50	6.50
	24"	11.00	10.00
	36"	16.00	14.00

Prices net F.O.B. Cumberland, Md.

BUCHANAN LUMBER CO.
CUMBERLAND, MD.

Would you use 1925 construction equipment today? No. Why not change over and equip your jobs with modern office trailers and cut costs.

CONTRACTORS' OFFICE TRAILER
Models 23½'-30'-35' Price $2170 to $3580

Birch finish, drafting table, 2 built-in desks with letter files & drawers, other conveniences. Can offer three years' finance plan. Write for pictures and plans.

TRAILER VILLAGE SALES, INC.
8642 Pulaski Highway, Baltimore 21, Md.
Phones: Murdock 7-2233

Calif., Oakland—OFFICE—East Bay Municipal Utilities Dist., 512 E. 16 St., plans by Michael Goodman, 2161 Shattuck Ave., Berkeley, office at Adelina and 22 Sts., $400,000.

▲ Calif., Redwood City — SCHOOLS — Redwood City Elementary School District, Redwood City, $1,500,000 bond election Oct. 5, schools. $1,500,000. CD 3/9.

Calif., Richmond—SCHOOL—Richmond City Elementary School Dist., 1108 Bissell Ave., plans by John C. Warnecke, 507 Howard St., San Francisco, Mira Vista Elementary School, $500,000. CD 1/15/54.

▲ Calif., San Francisco—HOME FOR AGED—City and San Francisco Co., City Hall, $7,070,000 bond election Nov. 2, modernizing City's Laguna Honda Home for the Aged.

▲ Calif., San Francisco—HOSPITAL—City and San Francisco Co., City Hall, $7,960,000 bond election Nov. 2, expansion and modernization of San Francisco Hospital.

▲ Calif., San Francisco—EXHIBIT, CONVENTION HALL—City and San Francisco Co., City Hall, $3,275,000 bond election Nov. 2, for underground exhibit and convention hall in the civic center.

Calif., Sunnyvale — SCHOOL — Sunnyvale Elementary School Dist., plans by John Lyon Reid, 1069 Market St., San Francisco, Morse Avenue Elementary School, $400,000.

Calif., Visalia—SCHOOLS—Visalia Elementary School Dist., $980,000 bond election Sept. 28, schools. CD 6/3.

Calif., Walnut Creek—SCHOOL—Walnut Creek Elementary School Dist., plans by John Lyon Reid, 1069 Market St., San Francisco, East Central School, $600,000.

Conn., New Haven—MAINTENANCE, etc.—City, Richard C. Lee, Mayor, City Hall, city garage maintenance and supply house and warehouse, $300,000.

Conn., Norwalk—SCHOOL—City Bd. Educ., Norwalk, plans by Cram & Young, 15 Belden Ave., Norwal, elementary school, Honey Hill, $300,000.

▲ Conn., Stamford—SCHOOL—State of Conn., Ralph G. Macy, P. Wks. Comr., State Office bldg., Hartford, trade school, former Barnes Sanitorium property off High Ridge Rd., $2,542,508.

† D. C., Wash.—RESEARCH FACILITIES—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., research facilities at Naval Research Laboratory. $996,000.

Ind., Gary—SCHOOL—School City of Gary, 524 Garfield St., plans by Fred W. Collins, 543 Broadway, elementary school, 15 Ave. and Aetna St. $500,000.

Ind., Marion—COUNTY—Grant Co., plans by Hemmert & McCoonahey, Hartford City, county bldg., $800,000. CD 12/31.

Kan., Great Bend—ARMORY—Kansas National Guard, Topeka and City of Great Bend, $55,000 bond election Aug. 3, armory, $150,000, John Brown, State House, Topeka, state arsht.

Kan., McPherson—HOSPITAL—McPherson Co., $400,000 bond election Nov. 2, hospital addn.

Kan., Topeka—SCHOOLS—Highland Park School Dist., voted $628,000 bonds July 17, 2 schools. CD 7/19.

▲ Louisiana—REFORMATORY—State Bldg. Auth., State Capitol, Baton Rouge, first offenders reformatory, $1,510,000. Diboils & Kessels, 637 Pere Antoine Alley, New Orleans, engrs. Site to be determined later.

▲ La., Angola—PENITENTIARY—State Bldg. Auth., Gov. Robt. Kennon, State Capitol, Baton Rouge, addns. to state penitentiary. $1,545,500. CD 9/26/52.

▲ La., Baton Rouge—LIBRARY, AGRICULTURAL EXTEN.—State Bldg. Auth., State Capitol, Baton Rouge, plans by Bodman & Murrell, and W. B. Smith, 1175 Nicholson Dr., campus library, $3,500,000; plans by Jones & Roessle, Masion Blanche Bldg., New Orleans, agricultural exten. bldg., $750,000, Louisiana State University.

▲ La., New Orleans—SUPREME COURT AND OFFICE—State Bldg. Auth., State Capitol, Baton Rouge, plans by August Perez Jr., Audubon Bldg., Parham & Labouisse, American Bank Bldg., Favrot Reed Mathes & Bergman, Nola Bldg., supreme court and state office. $5,500,000.

La., Shreveport—OFFICE—State Bldg. Auth., State Capitol, Baton Rouge, state office. $400,000.

La., Shreveport—LIVESTOCK BLDG.—State Bldg. Auth., State Capitol, Baton Rouge, livestock bldg., $850,000.

▲ Md., Rockville — SCHOOLS — Montgomery Co. Bd. Educ., Rockville, plans by Ronald Senseman, 327 Carrol Ave., Takoma Park, Northwest Bethesda High School, Bethesda, $2,000,000; plans by McLeod & Ferrar, 1741 DeSales St. N. W., Wash., D. C., Wheaton Junior High School, Wheaton, $1,028,000. CD 2/2/53.

† Md., White Oak—RESEARCH AND DEVELOPMENT FACILITIES—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., research and development facilities at Naval Ordnance Laboratory. $361,000.

Mass., Needham—SCHOOL—Town, 1330 Highland Ave., plans by The Architects Collaborative, 96 Mt. Auburn St., Cambridge, elementary school, $300,000. CD 12/28.

Mass., North Brookfield—SCHOOL—Town, Grove St., plans by Julian W. Goodrich, 215 College St., Burlington, Junior Senior High School, $400,000-$500,000.

▲ Mich., Berrien Springs—HOSPITAL—Bd. Suprvs., Berrien Co., 1121 Milton Rd., Benton Harbor, $1,300,000 bond election Aug. 3, brick, steel convalescent hospital, central heating plant, 100,000 gal water tank, Cuthbert & Cuthbert, Ann Arbor, archts.

A squeeze of the trigger and 2" x 8" form shoring is anchored to concrete roadbed!

REMINGTON STUD DRIVER speeds fastening job on West Coast Highway

TEMPORARY ANCHORING OF FORMS TO CONCRETE can be time-consuming and costly—but it wasn't that way on the new San Francisco Freeway. Here, the Remington Stud Driver did the job in record time by setting up to 5 fastening studs per minute!

• The forms were used for pouring the Freeway's railings and curbings after the concrete roadbed had set. A workman simply moved down the base strip with the Stud Driver, and it was securely fastened! When the curbing was in, the forms were removed and the studs broken off below the concrete surface. The small craters that remained were smoothed over with grout.

SAVINGS UP TO 80% IN FASTENING COSTS ARE NOT UNCOMMON with the Remington Stud Driver. Its speed, light weight (6 lbs.), and freedom from wires and hose make it ideal for all kinds of construction fastening. Find out how *you* can save with this powder-actuated tool by mailing the coupon below.

"If It's Remington—It's Right!"

Remington DU PONT

Listed & Approved by Underwriters' Laboratories, Inc.

QUESTIONS YOU ARE ASKING

QUESTION: What caliber cartridge powers the Stud Driver?

ANSWER: 32 caliber power loads are available in six grades, each designed for your specific fastening requirements.

MAIL THIS COUPON TODAY

Industrial Sales Division, Dept. E.N.R. -8
Remington Arms Company, Inc.
Bridgeport 2, Connecticut

Please send me a *free* copy of the new booklet showing how I can cut my fastening costs.

*Name*_____

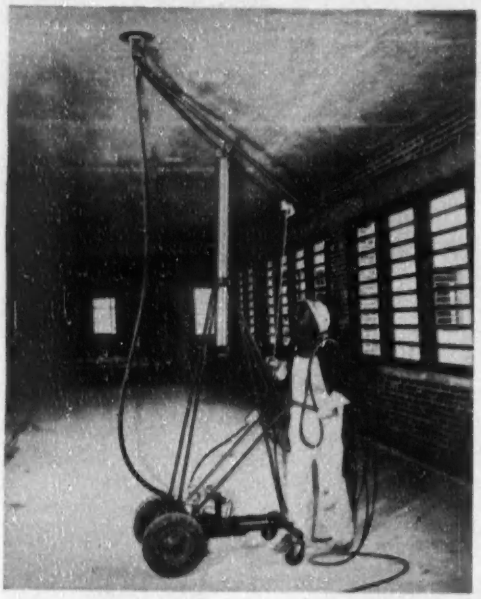
*Position*_____

*Firm*_____

*Address*_____

*City*_____ *State*_____

RUBBING CEILINGS?



Do it *with a*

GIRAFFE

- **FASTER AND EASIER:** One man will average almost 4000 sq. ft. per day. Does not need scaffolding.
- **CHEAPER AND BETTER:** Money saved on finishing will help pay for grinding.
- **DEPENDABLE:** Individual GIRAFFES have worked more than 1,000,000 square feet without major overhaul.

CONCRETE GRINDING CORP.
300 STRAIGHT ST. PATERSON, N. J.

GUNITE dense—durable—high strength
PNEUMATICALLY PLACED CONCRETE

for — Swimming Pools
Fireproofing Structural Steel
Lining Steel Stacks & Bunkers
Repairing Docks, Dams & Bridges
Reservoirs Insulating Concretes
Water Main Lining Thin Walls
Sewer Repairs Lining Rock Tunnels
Pile Protection Prestressed Tanks
Stucco Coatings Pressure Grouting

Write for the 50-page Gunite Handbook
It contains complete engineering data and specifications, and many photos of actual Gunite jobs.

GUNITE CONSTRUCTION CORPORATION
420 LEXINGTON AVE., NEW YORK 17, N. Y.
MURRAY HILL 3-7899

from
•
•
OFFICE MANAGER
•
to
•
GENERAL MANAGER
•
•

yes, that is the quality of the personnel available to your organization through the Classified Advertising pages of ENGINEERING NEWS-RECORD.

Classified Advertising Division
ENGINEERING NEWS-RECORD
330 W. 42nd St. New York 36, N. Y.

Mich., Detroit—SCHOOL—City, Bd. Educ., 1354 Broadway, plans by C. William Palmer, 409 Griswold St., Daniel Webster Elemeritary School. **$300,000.**

Mich., Grosse Pointe—SCHOOLS—City, 17150 Maume St., plans by Earl G. Meyer, 806 Farwell Bldg., Detroit, brick, steel Charles A. Poupard Elementary School, **$300,000;** Torrey Wood School, **$500,000.** CD 6/22.

Mich., Howell—SCHOOL—Bd. Educ., plans by Louis C. Kingscott & Assoc., 511 Monroe St., Kalamazoo, 3 elementary schools. **$800,000.**

▲ **Mich., Mount Clemens**—HOME—Bd. Suprvs., Macomb Co., juvenile home and health center, **$1,500,000:**

▲ **Minn., Albert Lea**—SCHOOL—Bd. Educ., Mrs. Leslie Hellie, clk., plans by Hammel & Green, 186 Fairview Ave. N., St. Paul, grade high school, **$1,000,000.**

Minn., Marshall—ARMORY—State Armory Bldg. Comn., 500 S. Sixth St., Minneapolis, plans by Bettenburg, Townsend & Stolte, 1437 Marshall Ave., St. Paul, 128x144 ft. armory, with 70x96 ft. drill hall, **$150,000.**

Minn., Pine Island—SCHOOL—Bd. Educ., P. Sargent, clk., plans by Haarstick, Lundgren & Assoc., W. 1391 First National Bank Bldg., St. Paul, high school, grade school addn., **$300,000.**

▲ **Mo., Kansas City**—EXPOSITION BLDG.—City, City Hall, voted **$6,000,000** bonds Aug. 3, exposition bldg. CD 6/28.

Mo., Sugar Creek—SCHOOL—Bd. Educ., defeated **$620,000** bonds July 24, elementary school.

Mont., Glendive—GYMNASIUM-AGRICULTURE—Dawson County High School Bd., Glendive, defeated **$350,000** bonds July 20, high school vocational agricultural bldg. and gymnasium. CD 12/2.

Neb., Kimball—ELECTRICAL PLANT—City, City Hall, electrical plant imprv. **$200,000.** Fulton & Cramer, 922 Trust Bldg., Lincoln, consult. engrs.

▲ **Neb., Omaha**—NURSES HOME—University of Nebraska, 12 and R Sts., Lincoln, plans by John Latenser & Sons, 1307 Farnam St., nurses home at University of Nebraska Medical College at Omaha. **$1,000,000.**

Neb., Sidney—ELECTRICAL PLANT—City, City Hall, electrical plant imprv. **$400,000.** Fulton & Cramer, 922 Trust Bldg., Lincoln, consult. engrs.

▲ **N. J., Trenton**—SCHOOLS—Hamilton Twp. Bd. Educ., 2069 Greenwood Ave. plans by Hankin, Stull & Backes, 212 W. State St., Steinart Elementary School addn., $1,000,000; elementary school **$300,000.** CD 7/22.

▲ **N. J., Trenton**—HOSPITAL, etc.—New Jersey Div. Purchase & Property, State House, plans by Kramer & Hirsch, 115 E. State St., State Hospital alterations, addns. **$1,200,000.** CD 1/8/53.

N. Y., Glen Cove—SCHOOL—Glen Cove School Bd., Forest Ave., 17-room school, 10-acre tract Roxbury Area, **$634,150.**

▲ **N. Y., Island Trees**—SCHOOLS—Island Trees School Bd., Farmedge Rd., Island Trees, **$3,451,200** bond election August 24, alterations to convert Memorial School into High School, $998,000; 8-room addn. to Stokes School, $214,000; 28-room elementary school adjacent to Stokes School, $1,176,000; 20-room elementary school adjacent to Memorial School, $887,000.

▲ **O., Cincinnati**—SCHOOLS—Bd. Educ., 608 E. McMillan St., bond election November 2, school bldgs., addns., **$15,000,000.** CD 11/15/51.

Okla., Lindsay—GENERATOR—City, Lindsay, voted bonds July 20 1,000 k.w. engine generator unit. **$125,000.** C. H. Guersey & Co., 2701 N. Oklahoma St., Oklahoma City, consult. engrs. CD 7/5/51.

Okla., Mangum—GENERATOR UNIT—City, Mangum, 2,100 h.p. engine generator unit for the city power plant, **$200,000.** Sam Harlan, c/o owner, engr.

Pa., Collingdale—SCHOOL—Collingdale School Bd., grade school, **$300,000.**

▲ **Pa., Erie**—SCHOOLS—School Dist. of Erie, Public Library, Erie, **$3,500,000** bond election November 2, schools. CD 6/11/53.

Tex., Abilene—FIRE STATION—City, City Hall, voted bonds July 17, combination fire station, **$300,000.** CD 7/26.

Tex., Borger—JUNIOR COLLEGE—Borger Independent School Dist., Borger, plans by Cantrell & Co., Hughes Bldg., Pampa, Junior College, **$375,000.** CD 1/27.

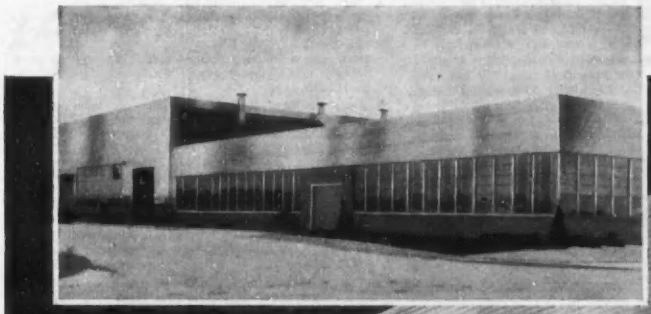
Tex., Corpus Christi—STORAGE—Corpus Christi Independent School Dist., 515 N. Carancahua St., storage bldg. **$110,000.**

▲† **Tex., Houston**—HOSPITAL—Veterans Admmin., Vermont Ave. Between H and I Sts., N. W., Wash. 25, D. C., plans by Wyatt C. Hedrick, 5201 Fannin St., archt.-consult. engr., 250-bed rein.-con. frame, brick hospital addn., etc. appurtenances, **$3,500,000.** CD 2/8/54; addns. and alterations to existing hospital bldg. incl. 1 story addn. to two ward bldgs., masonry const. **$600,000.**

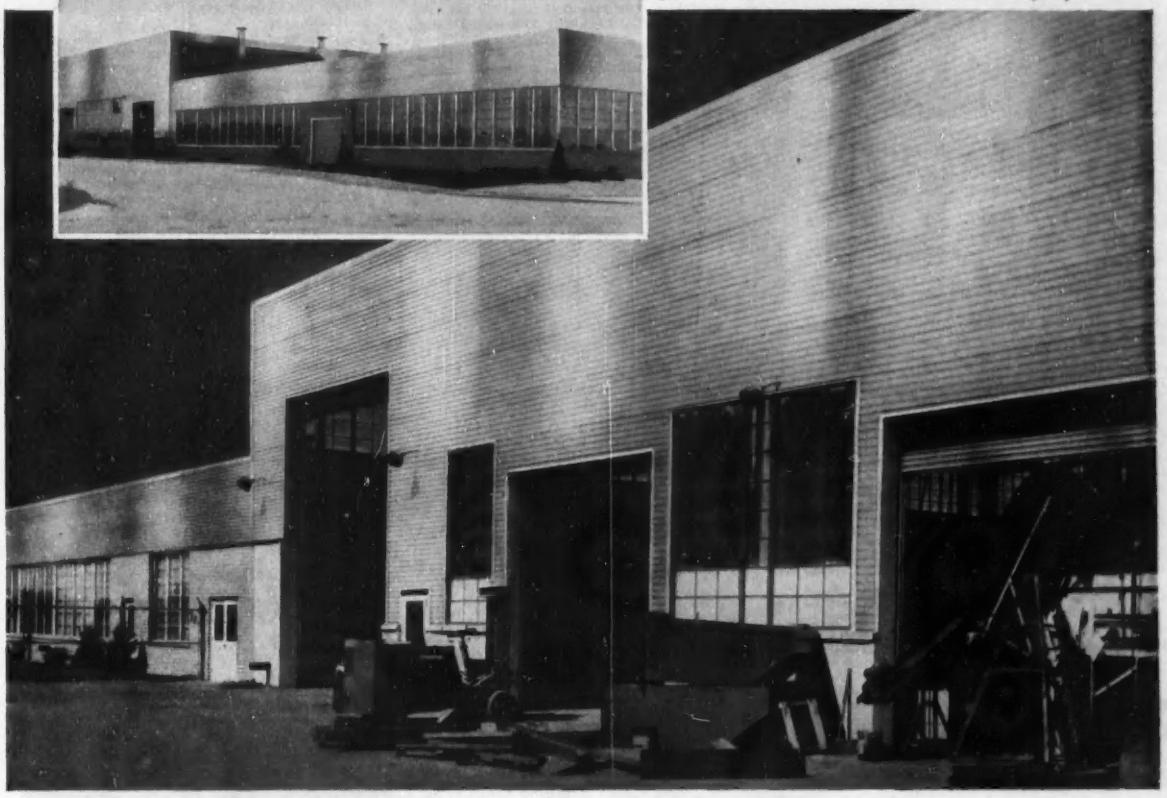
Tex., Lubbock—INFIRMARY, STUDENT UNION—Texas Technological College, Lubbock, plans by Atcheson & Atkinson, 204 Sanford Bldg., Lubbock and Davis & Foster, Mills Bldg., El Paso, infirmary, student union. $850,000. CD 7/23.

Vt., Winooski—SCHOOL—School Dist., Robert Lull, supt., plans by Julian W. Goodrich, 215 College Ave., Burlington, high school, **$500,000.** CD 3/13/52.

† **Va., Dahlgren**—TESTING FACILITIES—P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., testing facilities, Naval Proving Grounds, $212,000. CD 2/25/52.



Reynoside applied horizontally on the Rockford, Ill., plant of the Atwood Vacuum Machine Company.

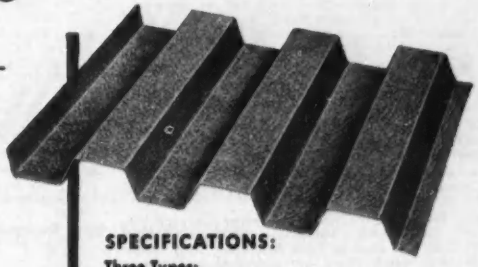


Reynoside

horizontal or vertical, this aluminum siding gives more for less

Atwood Vacuum Machine Company's plants at both Rockford and Stockton, Ill., are built with Reynoside—and it's specified for a third plant now building in Canada. Seth G. Atwood, Executive V.P., cites four reasons why: "*Appearance in keeping with clean and functional design... maintenance-free... heat-reflecting... easy installation cuts cost.*" He adds that this Reynoside has been up a year, through a full summer and a heating season... its insulating advantage has been proved! Put this better value in your building. Write for literature.

A complete installation service is available. For name of nearest franchised jobber-erector, call the Reynolds office listed under "Building Materials" in classified phone books of principal cities. Or write to Reynolds Metals Company, Building Products Division, 2009 S. Ninth Street, Louisville 1, Ky.



SPECIFICATIONS:

Three Types:
(A) 4" rib, .032" thick.
(B) 8" rib, .032" thick.
(C) 8" rib, .040" thick. Rib depth, 1".
Finish: Stipple-embossed.
Lengths: From 5' to 14' 5½".
Special lengths to order.
Width: 41⅝" over-all;
nominal coverage, 40".
Weight per square:
(A) 59.4 lbs. (B) 53.1 lbs. (C) 66.4 lbs.

SEE "MISTER PEEPERS," starring Wally Cox, Sundays, NBC-TV Network.

REYNOLDS ALUMINUM

BUILDING PRODUCTS

▲† **Va., Fort Belvoir**—HOUSING—U. S. Eng., 1st and Douglas Sts., N. W. Wash., D. C., troop housing, utilities, operational and maintenance facilities and liquid storage facilities. $2,787,000. CD 7/17/52.

† **Va., Quantico**—PERSONNEL FACILITIES, etc.—P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. personnel facilities and community facilities at Marine Corps Schools. $585,000. CD 10/2/53.

Wash., Tacoma—GARAGE—City, City Hall, $400,000 bond election Nov. 2, public works garage. CD 6/21.

Wis., Chilton—HOSPITAL—Calumet County Memorial Hospital Assn., Chilton, 36-room hospital, $470,000.

▲ **Wis., Janesville**—COURT HOUSE—Rock Co., plans by Carl Lloyd Ames, 3625 A. W. North Ave., Milwaukee, 4 story T-shaped, 51x181 ft. and 51x140 ft. court house, $1,665,000. R. Strass, 225 E. Michigan Ave., Milwaukee, structural engr. CD 5/5/53.

▲ **Wis., Madison**—CITY HALL, COURT HOUSE—City, City Hall and Dane Co., Court House, plans by Law, Potter & Nystrom, 121 S. Pinckney St., Madison, Wis., and Holabird, Root & Burgee, 180 N. Wabash Ave., Chicago, Ill., 8 story, part 4 story, bsmnt., about 235x285 ft., city hall and court house, $9,000,000. CD 7/30/52.

Wyo., Greybull and Basin—HOSPITAL—Special Hospital District, Greybull, new 20-bed hospital midway between Greybull and Basin, $330,000.

Wyo., Powell—NATATORIUM, etc.—Bd. of Educ., Powell, plans by Tresler & McCall, Cody, natatorium and auditorium bldg., $525,000. CD 5/4.

▲† **Alaska, Kenai**—FAMILY QUARTERS, etc.—U. S. Eng., Anchorage, family quarters, $1,000,000; combined training and EM-NCO club, BOQ with mess, utilities to serve foregoing, $500,000; POL storage tanks, $100,000.

† **Alaska, Nome**—COMMUNICATIONS BLDG.—U. S. Eng., Anchorage, communications center bldg. $100,000.

N. S., Halifax—ARSENAL—Defence Constr. Ltd., 25 Lyon St., Ottawa, Ont., R.C. Navy's arsenal, $900,000.

▲ **Ont., Barriefield**—HOSPITAL—Defence Constr. Ltd., 56 Lyon St., Ottawa, plans by Shore & Moffat, 79 Queen St. E., Toronto, 125-bed military hospital at Army Station. $1,500,000. CD 11/18/52.

Ont., Dryden—HOSPITAL—General Hospital Bd., Dryden, plans by Smith, Carter & Assocs., 173 Portage Ave., Winnipeg, Man., 50-bed hospital, $575,000. CD 1/11.

COMMERCIAL BUILDINGS

▲ **Calif., Brookhurst**—DWELLINGS—Owner, c/o John J. Kewell, archt., 1344 Wilshire Blvd., Los Angeles, 100 frame, stucco dwellings $1,000,000.

▲ **Calif., Burlingame**—SHOPPING CENTER—Atlantic Life Insurance Co., c/o Coldwell Banker Co., 57 Sutter, San Francisco, plans by Robert B. Liles, 709 Mission St., San Francisco, Burlingame Plaza Shopping Center on Mills Estate, $1,500,000.

▲ **Calif., Los Angeles**—OFFICE—Union Oil Co. of California, 617 W. 7 St., plans by Pereira & Luckman, 7421 Beverly St., 13 story office, $1,000,000.

Calif., Palo Alto—DORMITORY—Stanford University, Palo Alto, engineering students dormitory, $400,000.

Calif., San Bernardino—DWELLINGS—M. W. Pope Inc., 407 Balsa Ave., Newport Beach, plans by L. C. Major & Assoc., 511 N. LaCienega Blvd., Los Angeles, 31 frame, stucco dwellings, $300,000.

▲ **Calif., Stockton**—SCHOOL—Roman Catholic Archbishop of San Francisco, 1100 Franklin St., San Francisco, plans by J. Clarence Felciano, 4010 Montecito Ave., Santa Rosa, St. Mary's High School, $1,500,000.

Calif., Sunnyvale—RESTAURANT—Carlen Constr. Co., 115 Market St., San Francisco, drive-in restaurant, bowling alley, $400,000.

Colo., Colorado Springs—DORMITORY—Colorado College, Colorado Springs, women's dormitory, $913,000. CD 10/30/50.

Conn., West Haven—CHURCH, etc.—Our Lady of Victory Church, Rev. Thomas J. MacMahon, pastor, 11 Tyler St., plans by Polak & Sullivan, 1397 Chapel St., New Haven, church and community house, Ocean Ave. facing Long Island Sound. $450,000.

Del., Wilmington—ART CENTER—Delaware Art Center, c/o Victorine & Samuel Homsey, archts., 917 Gilpin Ave., Art Center addn. $300,000.

Ill., Chicago—RESTAURANT AND SHOPPING CENTER—R. N. Crawford (agent), 134 N. LaSalle St., Chicago, plans by B. Goldberg, 721 N. Michigan St., Chicago, Zone 11, restaurant and shopping center at NE corner Rush and Walton Sts., $500,000.

▲ **Ill., Chicago**—APARTMENT—Standard Securities & Management Corp., 69 W. Washington St., Chicago, Zone 2, plans by Louis I. Simon, 179 W. Washington St., Chicago, Zone 2, 11 story 65-unit apartment at Buena Ave. and Marine Dr., $1,350,000.

Ill., Geneva—CHURCH—Geneva Lutheran Church, Geneva, plans by Hansen & Olson, 8114 S. Western St., Chicago, 1 story, bsmnt., church-parish, $350,000.

Ind., Indianapolis—DORMITORY—Butler University, O. M. Ross, pres., 49 and Sunset Sts., 2 story, bsmnt., stone, brick women's dormitory, $700,000. McGuire & Shook, 1400-01 Fletcher Trust Bldg., Indianapolis, Zone 4, consult. engrs. CD 7/23.

Ia., Cedar Rapids—FINE ARTS BLDG.—Coe College, Cedar Rapids, fine arts bldg., bldg. rehabilitation, $500,000.

Ky., Louisville—APARTMENT—Joe Dawkins Engr. Corp., 522 Realty Bldg., Zone 2, 20 apartment bldgs., 80 units, shopping center, hotel, artificial lake, concrete masonry. $850,000.

La., Shreveport—MEDICAL AND TECHNOLOGY BLDG.—Centenary College, Centenary Blvd., medical and technology bldg. unit, $325,000; engineering bldg., $350,000.

▲ **Md., Takoma Park**—SHOPPING CENTER—McCormick-Goodhart Estate, (Atty. Richard Wilmer, Transportation Bldg., Wash., D. C.), plans by Abbott Merkt & Co., 10 E. 40 St., New York, N. Y., shopping center at intersection of New Hampshire Ave. and University Lane, Langley Park. $2,000,000.

Mass., Brookline — APARTMENT — Saran Realty Co., c/o Arthur G. Manaselian, archt., 30 Huntington Ave., Boston, 3 story, bsmnt., brick, apartment Parkman and St. Paul Sts., $320,000.

Mich., Dearborn — SCIENCE and TECHNICAL — Henry Ford Community College, 4824 Lois St., plans by Jahr-Anderson Assoc., Inc., 15011 Michigan St., 2 brick, steel science and technical bldgs., $500,000.

Mich., Detroit—DEPARTMENT STORE—Sam's, Inc., H. S. Onos, exec. vice pres., 520 Bates St., plans by Theodore Rogvoy, 929 Fox Bldg., 2 story, 75,000 sq. ft. department store, Warren and Connor Sts., $600,000.

Minn., Cambridge—HOSPITAL—Owner, c/o M. & G. Buetow, archt., 1931 University Ave., St. Paul, community hospital, $350,000.

Minn., St. Joesph—DORMITORY—College of St. Benedict, Sisters of O. S. B., Mother Richarda, St. Joseph, plans by Hammel & Green, 186 Fairview Ave. N., St. Paul, dormitory, $800,000.

Mo., Ferguson (St. Louis 21 P.O.)—EDUCATIONAL BLDG.—First Presbyterian Church of Ferguson, Rev. Robert I. Long Jr., pastor, 401 Darst Rd., Zone 21, plans by Study, Farrar & Majers, Arcade Bldg., 812 Olive St., St. Louis, Zone 1, 2 story, part bsmnt., 54x139 ft., 46x60 ft. brick, steel, concrete educational bldg. at northeast corner Darst Rd. and Clay Ave.

N. J., Ocean City—CHURCH, etc.—First Methodist Church, 501 8 St., plans by Ferronz & Taylor, 152 W. 42 St., New York, N. Y. church addns., alteration. $300,000.

▲ **N. J., Phillipsburg**—HOSPITAL—Bd. Trustees, Warren Hospital, Phillipsburg, plans by Frederick G. Frost Assocs., 144 E. 30 St., New York 16, N. Y., 4 story Warren Hospital, 8-acre site on Roseberry St. $2,500,000.

N. Y., Brooklyn—APARTMENT—Punia & Marx, 16 Court St., Zone 2, plans by Seelig & Finkelstein, 153 Pierrepont St., Zone 2, 6-story apartment, 751-65 E. 10 St. $405,000.

N. Y., Huntington—CHURCH—Huntington Methodist Church, Main St. and Clinton Pl., church, West Neck Rd. and Tanyard Lane, $300,000.

▲ **N. Y., New York**—HOTEL RECONSTR.—Hugh K. McGovern and David Jammerman, 342 Madison Ave., Zone 17, plans by Louis Brooks, c/o owners, reconstr. Mills Hotel, 7th Ave. and 36 St. into commercial bldg. $2,000,000.

O., Ashland—DORMITORY—Ashland College, Glenn L. Clayton, pres., Ashland, men's dormitory. $500,000. CD 12/3/52.

▲ **O., Columbus**—APARTMENT—Progressive Enterprises, Inc., c/o Don M. Casto & Son, 42 S. 4th St., plans by C. Melvin Frank, 185 E. State St., 500 unit apartment house proj. with commercial establishments, medical center and office bldgs. $6,000,000.

▲ **O., Dayton**—HOUSING—H. J. Krierger, c/o Chipley Realty Co., 2901 Ralston St., 140 single homes, 30-acre tract, south of and adjacent to Joy Apartments Proj. on McArthur Ave. at Nicholas Rd. $1,540,000.

Okla., Tulsa—EDUCATIONAL BLDG.—Will Rogers Memorial Methodist Church, 1138 S. Yale St., plans by Koberling & Brandenberg, Court Arcade, educational bldg. at 12 and Yale Sts., $750,000.

▲ **Pa., Barren Hill**—SHOPPING CENTER—Penn Fruit Co., 1919 Chestnut St., Phila., shopping center, parking area, $2,500,000, Otis Besore, c/o owner, engr.

Pa., Brookhaven — CHURCH — South Chester Baptist Church, 2017 W. Third St., Chester, church. $300,000.

Pa., Glenolden—SUPERMARKET—Penn. Fruit Co., 1919 Chestnut St., Phila., plans by David Supowitz, 246 S. 15 St., Phila., Pa., supermarket, Ashland Ave. and MacDade Blvd. $300,000.

▲ **Pa., King of Prussia**—BUSINESS and SHOPPING CENTER—American Stores Co., 434 N. 19 St., Phila., business and shopping center, 12 stores. $2,500,000.

Pa., Phila.—CHURCH, etc.—Calvary Memorial Church, 7353 Roosevelt Blvd., plans by Harold E. Wagoner, 117 S. 17 St., church and school. $300,000. CD 2/18.

Tex., Amarillo—NURSES HOME—St. Anthony's Hospital, c/o Mother Mary of Lourdes, Mother Superior, 707 N. Polk St., plans by Emmett F. & James F. Rittenberry, Fisk M & P Bldg., 3 story 45,000 sq. ft., brick, masonry bsmnt., nurses home. $500,000.

Tex., Cuero—SCHOOL, CONVENT—Most Rev. Robert E. Lucey, Archbishop, 230 Dwyer Ave., San Antonio, plans by John E. Lindabury, 205½ E. Constitution St., Victoria, catholic school and convent. $300,000.

▲ **Tex., Dallas**—DWELLINGS—Centex Constr. Co., 4911 Greenville St., (a) 28 dwellings, $305,100; (b) 31 dwellings, $323,335; (c) 21 dwellings, $300,000; (d) 25 dwellings, $325,000; (e) 40 dwellings, $368,115; (f) 43 dwellings, $389,750; (g) 34 dwellings, $357,500; (h) 36 dwellings, $368,825; Section 2, extens. of Country Club Addn.

▲ **Tex., Fort Worth**—DOCTORS OFFICE BLDG.—International Bankers Life Insurance Co., c/o J. W. Walden, pres., Continental Life Bldg., plans by Wyatt C. Hedrick Co., 1200 T & P Bldg., 12-story, 183,000 sq. ft. steel frame doctors office bldg., 300-car parking garage, Pennsylvania and Summit Sts. Approx. $3,000,000.

▲ **Tex., Houston**—DWELLINGS—Wm. G. Farrington & Co., 1661 Tanglewood, (A) 18 dwellings, $477,600 (B) 6 dwellings, $319,000 (C) 12 dwellings, $358,500 (D) 10 dwellings, $331,750 (E) 6 dwellings, $348,000 (F) 8 dwellings, $341,125 (G) 14 dwellings, $369,195, second section of Tanglewood Subdivision, Swank Project.

▲ **Tex., Houston**—Clark W. Henry & Assocs., 2054 Richmond St., 24 masonry dwellings, $358,500; 19 misc. types dwellings, $344,175; 22 one-story rambling type masonry dwellings, $338,160; 16 masonry dwellings, $305,000; in extens. Jersey Village off Hempstead Rd.

▲ **Tex., Houston**—DWELLINGS—Sterling Hogan, Sr. and Oscar Holcombe, First Natl. Bank Bldg., 30 dwellings, $324,000; 20 brick dwellings, concrete slab fdn. $310,000; 27 dwellings, $318,500; 36 dwellings, $372,500; 33 dwellings, $356,150; in Parkwood Extens.

Tex., Houston—DWELLINGS—C. E. King, c/o King Building Co., 411 W. 11 St., 28 dwellings, $314,750; 41 dwellings, $415,000; 25 dwellings, $300,000; 45 dwellings, $450,000; 38 dwellings, $375,000; 22 dwellings, $319,165; 30 dwellings, $328,850; 33 dwellings, $356,175, 526-acre tract between Houston and Lake Houston in Victor Blanco Survey.

▲ **Tex., Houston**—DWELLINGS—Truett Peachey, c/o Iverness, Inc., 9402 Bevlyn St., 13 masonry dwellings, $368,000; 10 masonry dwellings, $349,500; 7 dwellings, $335,000; 6 solid masonry dwellings, $308,000; 8 solid masonry dwellings, $340,000. 8-acre sites in Memorial Drive Area.

Tex., San Antonio—DWELLINGS—Allied Building Co., c/o Cresthaven Heights, 25 addnl. one story masonry dwellings, concrete slab fdn. etc. $310,000.

▲ **Tex., San Antonio**—DWELLINGS—H. P. Orts, Developer, Rittiman Rd., 32 frame dwellings, $357,500; 32 frame dwellings, masonry trim, concrete slab fdn. $310,000; 26 brick veneer dwellings, concrete slab fdn. $336,150. expans. of Wilshire Terrace Subdivision.

Tex., San Antonio—H. B. Zachry Properties, Inc., Box 2570, 12 solid masonry luxury type homes, concrete slab fdn. $328,500; 16 one-story rambling dwellings, concrete slab fdn. $341,000; 18 masonry type dwellings, concrete fdn. $336,665 in extended sect. Northwood Estates.

Wyo., Powell—COLLEGE BLDG.—Northwest Community College, Powell, plans by Tresler & McCall, Cody, college $397,000.

INDUSTRIAL BUILDINGS

Conn., Wethersfield—MANUFACTURING—John Oldham Displays, c/o Walter J. Douglas Assocs., archts., 1005 Farmington Ave., West Hartford, 2 story, 60x100 ft. mfg. plant, Deane Hy. $150,000.

D. C., Wash.—GARAGE—Goldnamer Assoc., Tower Bldg., plans by W. F. Sillman, 28 S. 18 St., Phila., Pa., 5 story 2 bsmnt. parking garage at 11 and F Sts. N.W., $550,000.

▲ **Ill., Chicago** — WAREHOUSE — Independent Grocers Alliance, 131 S. Wabash St., warehouse, 95 and Stony Island Ave. $1,000,000.

Ill., Chicago—FACTORY—Superior Match Co., 7530 Greenwood St., factory 103 St. and Stony Island Ave., $500,000.

Ind., Gary—PLANT—Republic Steel Corp., Republic Bldg. Cleveland, Zone 15, building for production of carbon and alloy cold-drawn bars and alloy cold-heading wire at Union Drawn Steel Division Plant. R. H. Bahney, c/o owner, ch. engr.

▲ **Md., Rockville**—PLANT—National Publishing Co., 301 N. St. N.E., Wash., D. C., plant, Rockville Pike. $2,500,000.

Mass., South Boston—WAREHOUSE—Cooper Rubber Co., c/o Meyer Louis, archt., 294 Washington St., Boston, 40x75x115 ft. warehouse and offices, 423 Dorchester Ave., $115,000.

Mich., Dearborn—FREIGHT TERMINAL—Michigan Motor Freight Lines, 2225 Howard St., Detroit, plans by George D. Mason & Co., 409 Griswold St., Detroit, 1 story, 100x110 ft. motor freight terminal addn., $100,000.

Mo., Kansas City—GARAGE, etc.—Greenlease Motor Car Co., 29 and McGee Trafficway, Kansas City, Mo., plans by S. H. Sibben, 1009 Baltimore St., Kansas City, Mo., garage, service and sales bldg., $200,000.

O., Canton—PLANT—Republic Steel Corp., Republic Bldg., Cleveland, Zone 15, building for fabricating addnl. sectional plate structures for highway drainage at Culvert Division Plant. R. H. Bahney, c/o owner, ch. engr.

▲ **O., Cleveland**—LABORATORY, etc.—Union Carbide & Carbon Corp., Box 6087, plans by Skidmore, Owings & Merrill, 575 Madison Ave., New York, N. Y., garden type physics research laboratory and administrative bldg., West Lake and Clague Rds., Bay Village. $4,000,000. H. R. Holman, ch. engr. CD 11/25.

O., Dayton—FACTORY—D. W. Mikesell Co., 142 S. Williams St., 1 story plant to mfg. potato chips and popcorn, W. Leo St. in McCook Bowl Area, incl. 250-car parking. $350,000.

IF YOUR PLANS INCLUDE TOMORROW...

... Your Smartest Move Is HELTZEL Today!

Designed to meet future requirements —engineered for speed, accuracy and low cost operation — built to give you years of "around the clock" service . . . three good reasons why it's smart business to think of HELTZEL when you're thinking of concrete batching equipment.

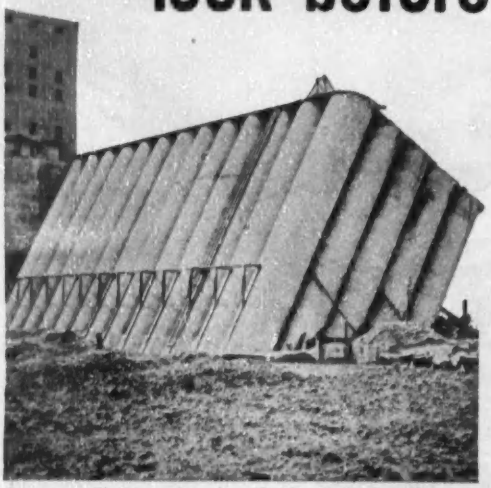
For when you purchase HELTZEL you're making a sound investment in the future. You are assured of the very finest quality, the last word in modern batching methods, backed by almost 50 years of batch plant manufacturing know how.

Compare HELTZEL in every way — see the new Heltzel Type 2 and Type 3 plants — talk with owners and you too, if you're thinking about tomorrow, will invest in HELTZEL today!

HELTZEL BATCHING PLANTS

The HELTZEL STEEL FORM & IRON CO., 7900 THOMAS ROAD, WARREN, OHIO

look before you lean



Transcona Elevator, Canadian Pacific Railway, Winnepeg, Canada, which tipped 27°—righted by the Foundation Company Ltd. of Canada.

An elevator tips—a bridge sags—a building settles—a dam goes out—costly and serious mistakes in construction work. That's why it pays to make test borings before designing foundations. And, when you investigate subsoil conditions, you want the best—ACKER! For, Acker makes a complete line of low-cost, easy-to-operate soil sampling equipment—from hand to power driven tools.

Remember, too, Acker's 33 years of experience in designing and building soil sampling and core drilling equipment ONLY, is your guarantee of dependable, satisfactory operation.

Free!

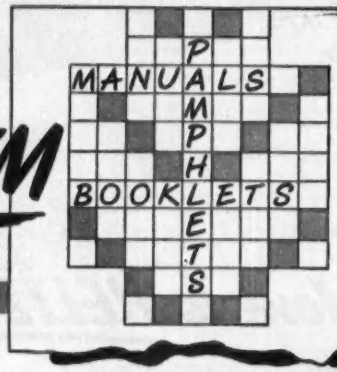
Write today for this complete, illustrated collection of information about soil sampling. Ask for Bulletin 25, ENR.

ACKER DRILL CO., Inc.

725 W. Lackawanna Avenue Scranton, Penna.

Manufacturers of a complete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment

IF THIS IS YOUR PROBLEM



THIS IS YOUR ANSWER

The publications specialists of McGraw-Hill TECHNICAL WRITING SERVICE will write, edit, illustrate, design, and print your business literature for you. Save money and time in the production of Equipment Manuals, Product Bulletins, Handbooks, Company Histories, Annual Reports, and other such vital material. Let our staff be your staff for Technical and Business publications.

Write
Technical Writing Service
McGraw-Hill Book Co., Inc.
330 W. 42nd St., N. Y. 36, N. Y.
LOngacre 4-3000

This service is available through ad agencies.

O., Warren—PICKLING FACILITIES—Republic Steel Corp., Republic Bldg., Cleveland, Zone 15, pickling facilities imprvs., roll turning equipment and other alterations for production at Warren Plant. R. H. Bahney, c/o owner, ch. engr.

O., Youngstown—HYDRAULIC PIPE EXPANDER—Republic Steel Corp., Republic Bldg., Cleveland, Zone 15, hydraulic pipe expander to produce electric weld pipe and imprvs. to pickling facilities and roll turning equip. R. H. Bahney, c/o owner, ch. engr.

▲ Ore., Portland—OIL REFINERY—Sunset Oil Co., 530 W. 6 St., Los Angeles, Calif., oil refinery, $30,000,000.

Pa., Kimberton—PLANT—A. C. Roberts Co., Kimberton, plans by Douglass Marsh Blum, 23 S. Main St., Phoenixville, meat packing plant, $150,000. Robert E. McLaughlin, 1411 Walnut St., Phila., consult. engr.

▲ Pa., Phila.—GARAGE, OFFICE—Laigh M. Cowan, 121 Chestnut St., plans by Herman H. Kline, 34 S. 17 St., garage and office, 2nd and Chestnut Sts. $3,500,000.

▲ Pa., Plymouth Meeting—SERVICE—Phila. Electric Co., Ninth and Sansom Sts., Phila., service bldg., parking area. $1,500,000. N. C. McHugh, co. engr.

▲ S. C., Jamestown—PLANT—Prouvost Lefebvre Co., c/o Branch River Wool Co., Woonsocket, R. I., wool processing plant. $3,000,000 for Santee River Wool Co. near here.

Tex., Angleton—PLANTS—Standard Sulphur Co., Damond Mound, Tex. and c/o G. B. Ebard St., Rosenberg, sulphur mining plant unit on Bryan Dome, $250,000; addnl. sulphur mining plant addn., at Damond Mound Dome, $200,000; sulphur mining plant unit, on Allen Dome, $300,000.

▲ Tex., Fort Worth—WAREHOUSE—U. S. Cold Storage Corp., 500 E. 3 St., Kansas City, Mo., plans by Preston M. Geren, 1607 Fort Worth Natl. Bldg., 1 story concrete cold storage warehouse, R. R. at Samuels and N. E. 23 Sts. $1,000,000. CD 7/23/54.

Tex., Houston—PARTS DEPOT, etc.—Ford Motor Co., 5800 Clinton St., expans. of huge auto parts depot, masonry const. $300,000; modernization and expans. of warehousing depot. $400,000.

Tex., Houston—WAREHOUSING—Southern Barge Terminal, c/o John C. Ridley, N. Esperson Bldg., warehousing, $450,000; repair shop. $90,000 on Old Market St. at Greens Bayou.

Ont., London—PLANT—Kelvinator of Canada Ltd., Dundas St. East, plant addn. $350,000. CD 9/5/50.

Ont., Oakwood—PLANT—Oakwood Iron Works, Oakwood plant reconstr., $150,000.

Ont., Streetsville—WAREHOUSE, PLANT—Graham Bell Enamelling Co., Streetsville, warehouse and enamelling plant, $175,000.

Que., St. Therese—PLANT ADDN.—Reichhold Chemical (Canada) Ltd., 1919 Weston Ave., Toronto, Ont., plant addn., $150,000. CD 7/3/51.

UNCLASSIFIED

▲ Calif., San Francisco—STADIUM—City and San Francisco Co., City Hall, $5,000,000 bond election Nov. 2, for stadium to handle major league baseball and other national sports events.

† Md., Indian Head—UTILITIES—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., utilities at Naval Powder Factory, $345,000.

Mich., Detroit—PARKING LOTS—City, City Council, Guardian Bldg., surfaced parking lot Michigan and Junction Sts., $180,000; paved parking lot Harper and Van Dyke Sts., $325,000; paved parking lot Harper and Chambers Sts., $101,000. George R. Thompson, city engr.

▲ Mo., Kansas City—PARK IMPRVS.—City, City Hall, voted $3,289,000 bonds Aug. 3, park imprvs. CD 6/28.

O., Dayton—PARK IMPRVS.—City, City Hall, plans by W. Ray Yount, 419 Third Natl. Bldg., Bomberger Park Imprvs., East Dayton-Recreation Center bldg., $185,000; swimming pool, $70,000; gymnasium, $85,000. John C. Hale, city engr. CD 6/30/54.

▲ Oklahoma—POWER PLANT, TRANSMISSION LINE—Oklahoma Gas & Electric Co., 321 N. Harvey St., 170,000 k.w. steam generating power plant addn. to the River Bank Station at Muskogee, $20,000,000; 114 mi. 161,000 volt transmission line from Muskogee to Harrah, $1,000,000. Pioneer Service & Engineering Co., 231 S. LaSalle St., Chicago 4, Ill., consult. engr., Leo Nash, c/o owner, engr. CD 7/6/51.

Tex., Abilene—SWIMMING POOL, etc.—City, City Hall, voted bonds July 17, swimming pool, $100,000; parks, $200,000. CD 7/26/53.

▲ Wash., Tacoma—STREET LIGHTING—City, City Hall, $1,500,000 bond election Nov. 2, street lighting. CD 4/20/53.

Wisconsin—POWER LINE—Wisconsin Power & Light Co., 122 W. Washington Ave., Madison, power line, town of Pella, Shawano Co. $238,000.

Wis., Milwaukee—TELEVISION STUDIO—Midwest Broadcasting Co., 723 N. Third St., plans by Rene Brugnoni, 383 Madison Ave., New York, N. Y., television studio-office, WCAN-TV, $250,000, Chas. R. Capps, c/o WCAN-TV, 808 N. Third St., consult. engr. CD 9/8/52.

Alaska — TELEPHONE LINES — Matanuska Telephone Assn., Palmer, telephone lines to 710 homes, Palmer, $567,000.

Master Plumber–

You're Right

–Day or Night–

When you Specify

WOLVERINE!

Copper water tube

S.P.S. pipe

Electric-welded steel tube–

for low pressure, non-corrosive applications in closed systems

Order it by Name

...and BUY FROM YOUR WHOLESALER

WOLVERINE TUBE

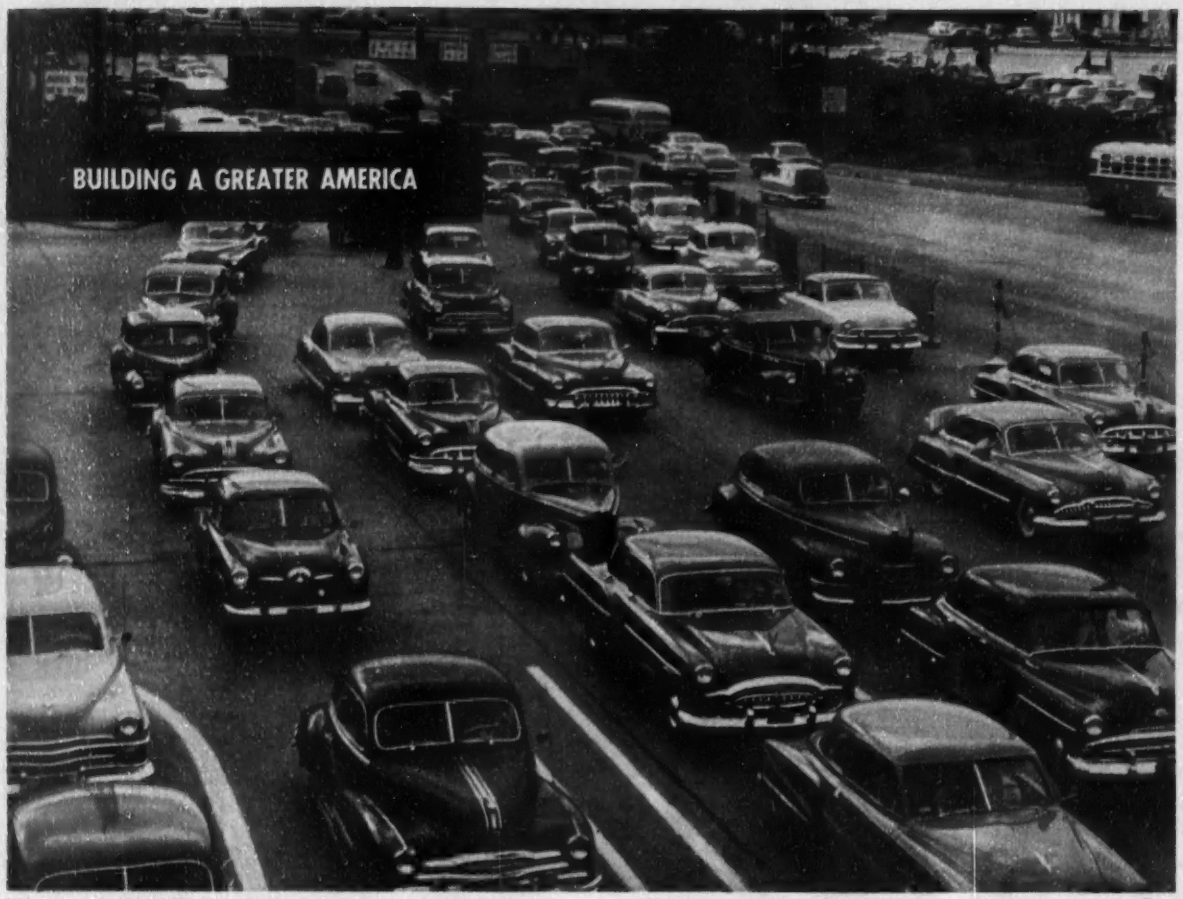
DIVISION OF CALUMET & HECLA, INC.

Manufacturers of Quality-Controlled Tubing

1425 CENTRAL AVE. • DETROIT 9, MICH.

PLANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA. SALES OFFICES IN PRINCIPAL CITIES

EXPORT DEPT. 13 E. 40TH ST., NEW YORK 16, N. Y.



The cost of untangling traffic jams involves more than laying concrete. Economic and traffic studies, right-of-way acquisition, demolition, drainage, utility relocation, bridges, and often buildings are also part of the highway picture.

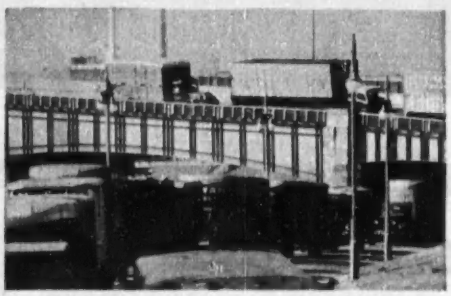
Needed: $50 Billion Worth of Highways

MOTOR VEHICLE REGISTRATIONS now top 56,000,000 – up more than 110% since 1931. Highway mileage, in the same time, has increased only 10%. In spite of $17 billion poured into highway construction and maintenance since 1946, highway officials say we're slipping behind, need $50 billion more in the next 15 years.

A nation that needs $3.5 billion a year in new highways – just to keep up with itself – both demands and produces a strong economy and a strong construction industry.

The men who guide, produce and pay for this work must have wide-angle vision. They must integrate earthmoving, paving, drainage, bridge structures, toll collecting facilities, and many other problems that go with highway construction. On top of their technical skills they must know financing, costs, labor relations, logistics, local ordinances, governmental activities, and other non-technical subjects.

Engineering News-Record, with its wide-angle reporting, is the only publication that keeps them informed on all these forces and factors that affect building and construction. That's why, as this greater America is built, you'll find your most important customers reading Engineering News-Record.



Good highways speed transportation of people and goods, opening the door for new economic activity and construction of all types in new areas.

Photos courtesy of Standard Oil Co. (N.J.)

In building and construction,

IF YOU'RE IMPORTANT YOU EITHER READ

ENGINEERING NEWS-RECORD

OR YOU ADVERTISE IN IT, OR BOTH.

Write for the new EN-R Market Report on the New York Thruway.

A McGraw-Hill Publication
330 West 42nd St., New York 36, N.Y.
Member • ABC • ABP

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—BUILDINGS

▲ **Conn., Windsor Locks**—SCHOOL—BA 8/27—Town, Henry M. Broderick, chn. School Bldg. Comn., 50 Church St., high school, $1,500,000. Plans deposit $50. Ernest Sibley & Ernest Sibley, Jr., 7 S. Main St., West Hartford, archts. Robert W. Loomis, 32 Maple Ave., Windsor, struct. engr. CD 4/9.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

C. J. Maney Co., Inc., 173 Bedford St., Lexington, Mass. LB $4,329,921. grade crossing elimination, Winchester. Bids Aug. 10. CD 7/27.

BUILDINGS

LOW BIDS AND CONTRACTS

Carroll, Verge & Whipple, 370 Wabconah St., Pittsfield, Mass. CA $412,668. est. $400,000. SCHOOL Krats Property, DALTON, MASS. Town, School Bldg. Comn., Martin F. Beavers, c/o town clk., Town Hall, Dalton, Mass. CD 8/4, under LB.

Walsh Bros., 150 Hampshire St., Cambridge, Mass. CA $413,900. est. $400,000. elementary parochial SCHOOL Highland Ave. and Pickering St., NEEDHAM, MASS. St. Joseph's R. C. Church, c/o Chancery Office, 1 Lake St., Brighton, Mass. Bids July 22. CD 7/14.

Industrial Construction Co., 120 Prospect Ave., Hartford, Conn., CA $300,000, DORMITORY, Holcomb St., HARTFORD, CONN. Connecticut Institute for the Blind, School Dpt., 120 Holcomb St., Hartford, Conn. Bids July 20. CD 7/15.

▲ **Frouge Constr. Co., Inc.**, 74 Goodsell St., Bridgeport, Conn. LB $2,659,000. HOUSING Proj. MR-55, STAMFORD, CONN. Housing Auth. of City of Stamford, 100 Myano Lane, Stamford, Conn. Bids Aug. 10. CD 7/8.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲ **N. Y., New York**—OUTPATIENT DPT. BLDG.—BA 9/1—Dpt. P. Wks., Municipal Bldg., Zone 7. Contr. No. 1, general constr.; Contr. No. 2, plumbing; Contr. No. 3, heating and ventilating; Contr. No. 4, electric work and lighting fixtures for constr. of new out-patient department bldg. for Fordham Hospital, Crotona Ave. and Southern Blvd., Bronx Boro. Plans deposit $25. CD 2/4/43.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

R & S Construction Co., 1341 Garrison Ave., New York, N. Y., LB, $681,170, recreation center, north of Prospect Pl., between Troy and Schenectady Aves., St. John's Park, Contr. BG-11700-249. BROOKLYN, N. Y. Comr. Parks, Office of Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York 21, N. Y. Bids Aug. 11. CD 8/6.

▲ **Kenny Constr. Co.**, 3220 Oakton St., Skokie, Ill. LB $2,343,974, grading, drainage, structures, paving and trunk sewer 35 St. to Stoddard Pl. on East Capitol St. WASH., D. C. Dir. of Hys., Govt. of Dist. of Columbia, 499 Pennsylvania Ave., N. W. Wash., D. C. Bids Aug. 11. CD 7/13.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **George A. Fuller Co.**, 597 Madison Ave., New York, N. Y., CA Approx. $15,000,000. New York STOCK EXCHANGE Bldg., 20 Broad St., NEW YORK, N. Y. 20 Broad Street Building, c/o General Realty & Utilities Corp., 285 Madison Ave., New York, N. Y. CD 7/2.

L. F. Driscoll Co., 18 W. Chelten Ave., Phila., Pa., CA $530,000, general constr., remodel FEMALE BLDGS. C-1 and C-5, Phila. (Byberry) State Hospital. PHILA., PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids July 21, awarded Aug. 6. CD 7/26 under LB.

Aberdeen Properties, Inc., 256 N. Columbus St., Arlington, Va., Owner Builds, $650,000, 50 brick, frame, semi-detached HOMES, 58 and Eastern Ave. N. E., WASH., D. C. M. S. Brown, 15 and Vermont Ave. N. W., Wash., D. C., archt.

SOUTH

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Burdine Constr. Co.**, Greenville, Miss. CA $534,849. clearing, topping 11 acres, clearing, grubbing 7 acres, grassing about 100 acres, relocating road, removing 15 structures, moving fence, 121,000 sq. yd. of concrete paving, 6,000 sq. yd. c. conc., storm drainage sys., Indianola Auxiliary Field, Greenville Air Force Base, GREENVILLE, MISS. U. S. Eng., 2301 Grant St., Mobile 7, Ala. Bids Aug. 2.

BUILDINGS

LOW BIDS AND CONTRACTS

Virgil Love, Point Pleasant, W. Va., CA $681,171. COURT HOUSE, POINT PLEASANT, W. VA. Mason County Court, Court House, Point Pleasant, W. Va. CD 8/6, under LB.

▲† **Tennessee**—Tennessee Valley Auth., New Sprankle Bldg., Knoxville, awarded contracts for Kingston Steam Plant, Tenn., John Sevier Steam Plant, Tenn., Gallatin Steam Plant, Tenn. and Shawnee Steam Plant, Tenn. Grand total $1,284,540.

KINGSTON STEAM PLANT, TENN.

Blaw-Knox Equipment Div., Blaw-Knox Co., Blawnox, Pa., CA $60,494, steel floor grating, stair treads and floor plates;

National Valve & Mfg. Co., 3131 Liberty St., Pittsburgh, Pa., CA $150,000, principal piping sys., supplement to original contract;

H. H. Robertson Co., Farmers Bank Bldg., Pittsburgh, Pa., CA $111,268, metal siding panels and misc. items, supplement to original contr.;

Westinghouse Electric Corp., Volunteer Bldg., Chattanooga, Tenn., CA $76,613, stators manufactured in Pennsylvania;

JOHN SEVIER STEAM PLANT, TENN.

Lambert Bros., Inc., Alcoa Hy. S. W., Knoxville, Tenn. CA $131,600, concrete aggregates, crushed stone and riprap;

Armstrong Cork Co., 727 W. Peachtree St., N.E., Atlanta, Ga., CA $470,321, furnishing, installing insulation for piping, ductwork and equipment;

GALLATIN STEAM PLANT, TENN.

Westinghouse Electric Corp., Volunteer Bldg., Chattanooga, Tenn. CA $163,185, circuit breakers manufactured in Pennsylvania, supplement to original contr.;

SHAWNEE STEAM PLANT, TENN.

Benjamin F. Shaw Co., Lombard and Lounsbery Sts., Wilmington, Del., CA $121,059, principal piping sys., supplement to original contr.

MIDDLE WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,

Darin & Armstrong, Inc., 2041 Fenkell St., Detroit 23, Mich. CA $3,386,000, est. $3,500,000. rein.-con., steel Tri-level grade crossing bridge Eight Mile Rd. and Woodward, F B4 of 63-19-10 C1-U (F 238 19), Wayne Co.;

Walter Toebe Co., 412 W. Gier St., Lansing, Mich. CA $1,477,681, est. $1,500,000. rein.-con., steel, bridge, 200 ft. retaining wall Detroit-Toledo, Expressway over River Raisin, UI 82 of 58-7-26 C1 (UI 424 2), Monroe Co. CD 8/3, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Chipley Realty Co.**, 720 E. Broad St., Columbus, O. Owner Builds, $1,050,000. 94 RESIDENCES, GROVE CITY, O.

▲ **Dugan Homes**, 3752 N. Sherman Dr. Indianapolis, Ind. Owner Builds. est. $1,125,000. 50 HOMES, Devington Addn., INDIANAPOLIS, IND.

▲† **Patham Const. Co.**, 100 N. LaSalle St., Chicago 2, Ill. CA, $1,024,163. WAREHOUSE, machine shop, grading, paving, Elwood Ordnance Plant, JOLIET, ILL. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids July 16, awarded Aug. 3. CD 8/9, under LB.

▲ **Spence Brothers**, 417 McCoskry St., Saginaw, Mich. CA est. $1,500,000. COUZENS HALL addns., alterations, Proj. No. 59, ANN ARBOR, MICH. University of Michigan, Bd. Regents, W. K. Pierpont, vice pres., Plant Service Bldg., Ann Arbor, Mich. Bids July 19. CD 6/18.

Al Fisher, 19322 James Couzens St., Detroit 35, Mich. Owner Builds. est. $825,000. 73 brick HOMES, Cherry Hill Rd., Middlebelt and Merriman Sts., GARDEN CITY, MICH.

Bert Gordon Realty Co., 18986 Schaefer St., Detroit 35, Mich. Owner Builds. est. $600,000. seventy 1 and 1½ story BUNGALOWS, Dartmouth, Jim Daly and John Daly Rds., INKSTER, MICH.

▲ **Rose-Hill Realty Co.**, 17300 Grand River St., Detroit 27, Mich. Owner Builds. est. $2,900,000. 270 brick single HOUSES, Orange and West Road Sect., TRENTON, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—BUILDINGS

▲ **Tex., Beaumont**—GENERATING UNIT—Bids Asked—Gulf States Utilities Co., 362 Liberty St., 100,000-kw electric generating unit at Neches Power Station near here. $12,000,000. CD 5/14/52.

▲ **Tex., Freeport**—REFINERY—Bids Asked—Avtane Refining Co., c/o Wm. V. Bentley Jr. and Assocs., 719 Duncanville St., Dallas, refinery, $15,000,000; pump station, $300,000. A. Leon Ro Sene, c/o 719 Duncanville St., consult. engr.

BUILDINGS

LOW BIDS AND CONTRACTS

Henkel Constr. Co., Mason City, Ia. LB $544,384, general contract, Roosevelt Elementary SCHOOL, MASON CITY, IA. Bd. Educ., Mason City, Ia. Bids July 30. CD 7/1.

Frank Moroso Builder, 73 Greendle Dr., St. Louis 5, Mo. CA est. $750,000. 74 RESIDENCES in Bayberry Hills subdivision east side of Bopp Rd. between Manchester Rd. and Crystal Lake Country Club, RICHMOND HEIGHTS (ST. LOUIS 17 P.O.), MO. D. M. T. Corp., c/o 9513 Manchester Rd., St. Louis 24, Mo.

H-M-G Building Co., 8499 Lackland Rd., Overland, St. Louis 14, Mo. Owner Builds. est. $500,000. 37 ranch-style brick, stone RESIDENCES South Twin subdivision on Lindbergh Blvd. 1 mi. south of Gravois Rd., ST. LOUIS COUNTY, MO.

▲ **Sam Rich Constr. Co.**, 7649 Delmar Blvd., University City, 24, Mo. CA est. $1,000,000. 1 and 2 story, U-shaped HOTEL, restaurant, shops, swimming pool, automobile service station, east side Lindbergh Blvd. north on Long Rd., ST. LOUIS COUNTY, MO. Samuel Rich, 7649 Delmar Blvd., University City, 24, Mo. Bernard McMahon, 101 S. Meramec Ave., Clayton 5, Mo., archt. CD 10/20/53.

Frank W. Sharp Constr. Co., 2202 Rosslyn St., Houston, Tex., CA $432,100, 1st Unit, Sec. 1, 36 brick dwellings, concrete slab fdn., BELLAIRE, TEX. Frank W. Sharp, 2202 Rosslyn St., Houston, Tex. CD 7/16.

C. H. Vaughn, Box 354, Naples, Tex., CA $529,000. Senior and Junior HIGH SCHOOL, DAINGERFIELD, TEX. Daingerfield Independent School Dist., Daingerfield, Tex. Bids July 29. CD 8/10, under LB.

▲ **Gasoline Plant Constr. Corp.**, M. Esperson Bldg., Houston, Tex., CA $1,000,000. gasoline REFINERY or recycling plant, SWEETWATER, TEX. Honolulu Oil Co. and Payne, Johnson & Byars, Tyler, Tex. CD 9/22/53.

FAR WEST

BIDS ASKED—BUILDINGS

▲ **Ore., Salem**—STORE—BA 9/3—Meier & Frank Co., 621 S.W. 5 St., Portland, selected list of bidders, 2 story concrete, bsmnt. department store. Total Cost $8,000,000. Welton Beckett & Assocs., 5657 Wilshire Blvd., Los Angeles, Calif. and James L. Paine, Salem, Ore., archts. CD 6/10.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OREGON**—State Hy. Comn., Highway Bldg., Salem,

Earl McNutt, Eugene, Ore., CA $1,251,712, grading 18.37 mi. 60 ft. concrete bridge, 13,000 rods fencing, Old Oregon Trail Hy. FAP FI-67 (2), and (3), Malheur Co.;

Kenneth C. Dack, Milton-Freewater, Ore., CA $90,651, grading, oiling 5.1 mi. Adams-Mission Co. Rd. FAP S-171 (1), Umatilla Co.;

Newport Constr. Co., 7031 N. E. Halsey St., Portland, Ore., CA $967,337, paving 9.3 mi. Willamette River-Hayesville Sect., Portland-Salem Expressway, FAP BFI-324-10, Marion and Clackamas Counties;

Parker-Schram Co., Builders Exchange Bldg., Portland, Ore., CA $778,229, paving 7.49 mi. Concomley Rd.-Hayesville unit, Willamette River-Hayesville Sect., Portland-Salem Expressway, FAP BFI-324 (10), Marion Co.;

J. M. Arnst, Builders Exchange Bldg., Portland, Ore., CA $73,139, grading, surf. 6.63 mi. East unit, Van-Drewsey Rd., FAP S-167 (1), Harney Co. Grand total $3,161,067. Bids Aug. 9, awarded Aug. 9. CD 8/5.

▲ **Wismer & Becker & Assoc.**, 1731 "S" St., Sacramento, Calif., LB $1,021,120, installing pumping units 4 and 5 at each of five pumping plants on the Colorado River Aqueduct. LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern Calif., 306 W. 3 St., Los Angeles, Calif. Bids Aug. 6.

BUILDINGS

LOW BIDS AND CONTRACTS

Paulsen Constr. Co., 1425 Jefferson St., Salt Lake City, Utah, LB $774,863, general constr., Junior HIGH SCHOOL, SALT LAKE CITY, UTAH. Salt Lake City Bd. Educ., 3212 S. State St., Salt Lake City, Utah. Lorenzo S. Young, 836 Continental Bank Bldg., Salt Lake City, archt. CD 7/21.

Century Builders, 900 12th Ave., Seattle, Wash. Day Labor. $675,000, 54 HOUSES, S.E. 42 St. and 150 S.E. SEATTLE, WASH.

▲ **Bechtel Corp.**, 4620 Seville Ave., Huntinton Park, Calif. CA $1,600,000. design and construct 360x480-ft. concrete tilt-up FACTORY, EAST LOS ANGELES, CALIF. California Containers Corp., 2001 E. 57 St., Vernon, Calif.

▲ **Robert E. McKee**, 4700 San Fernando Rd., Los Angeles, Calif., CA $1,993,990, Woodrow Wilson SCHOOL ADDN., GLENDALE, CALIF. Glendale Unified School Dist., 411 E. Wilson St., Glendale, Calif. Bids July 29, awarded Aug. 3. CD 8/4, under LB.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Alaska, Fairbanks**—BA 8/25—Alaska P. Wks., Dpt. Interior, 123 3 St., Juneau, 74,640 ft. water mains, two wells, chlorinator, pump station, etc. Proj. Aaa 50-A-169. $1,000,000. Plans deposit $25. Extended date. CD 7/23.

They're
Registered

Complete details and drawings of every Kinnear Rolling Door are kept in fireproof vaults.

KINNEAR
Rolling Doors

Parts are often supplied for Kinnear Rolling Doors that have served continuously for 30, 40 or 50 years. This Kinnear service is a form of "life extension" that protects your door investment *far into the future.*
You're sure of time-saving efficiency for *more years,* at lower cost with the smooth, *coiling upward action* of Kinnear Rolling Doors. Write for full details.

The KINNEAR Manufacturing Company
1820-40 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.

KINNEAR
ROLLING DOORS
Saving Ways in Doorways

CONCRETE JOIST CONSTRUCTION

RENTAL and ERECTION SERVICE

Member of
CONCRETE REINFORCING STEEL INSTITUTE
CRSI
FOUNDED 1924

Gateway PANS

Stocked in . . .
- CHICAGO
- NEW YORK
- BALTIMORE
- CINCINNATI
- KANSAS CITY

NAILED-DOWN & SLIP-IN PANS

Ask for Catalog No. 3100

GATEWAY ERECTORS, INC.
3233 W. Grand Ave., Chicago 51, Illinois

UNIT PRICES

Borrow & concrete items win Ohio road & bridge job

The Commissioners of Cuyahoga County, Ohio, awarded $1,088,449 road and bridge work 9% below their engineer's estimate and 3% below second bid. Horvitz Co., Cleveland, is the successful contractor of four who tried, thanks to his borrow price 32% under second bidder's, and his class "C" concrete item 23% below second bidder's price.

The Osborn Engineering Co., Cleveland, designed the twin bridge over Euclid Creek. It will be reinforced concrete; barrel arch; with three spans 108 feet, 140 feet, 108 feet; 362.29 feet abutment to abutment; with approach slabs and a 28-ft roadway.

No blasting is permitted in the bridge excavation.

Wilson Mills Road, designed by consulting engineer Harry Gallimore of Cleveland, consists of 4,100 feet of two 28-ft strips of reinforced concrete pavement.

The two low bidders are $33,567 apart. Horvitz' borrow price is $31,185 below M. F. Velotta Construction Co.'s and lowest of four. He is $31,500 under second bidder on concrete for arch barrels.

Unit prices submitted by the two are identical for 53 of 93 items. Biggest percentage difference between them is in cost of crane operation with low bidder 41% less.

Minimum wage rates prevailing in Cuyahoga County include: $3.30 per hour for crane and air compressor operators; $3.20 for carpenters and reinforcing placers; $2.15 for truck drivers; $2.45 for common labor.

Rail and highway transportation are available to the work site. Construction started Aug. 1 and must be completed Nov. 1, 1955.

Bidders include:

1C	Horvitz Co., Cleveland 15, Ohio	$1,088,449
2	M. F. Velotta Constr Co., Cleveland, Ohio	1,122,016
4	American Paving Co., Cleveland, Ohio	1,149,773
EE	Albert S. Porter, Cuyahoga County Engineer	1,196,500

Bids: 6-24-54 Item	Unit	Quantity	Unit Prices 1 C	2
Exc, common	cy	15,200	$1.00	$1.25
rock, for structs	cy	800	6.00	6.00
channel	cy	10	6.50	6.50
Borrow	cy	56,700	1.15	1.70
Remove & dispose:				
conc pvmt	sy	300	2.50	2.50
drives	sy	250	1.50	1.50
brick & cushion	sy	160	1.30	1.30
asph surface	sy	160	1.30	1.30
stone curb	lf	200	0.20	0.20
Storm sew VCP or prest conc P, 12"	lf	930	3.90	3.90
RCCP 12"	lf	1,150	5.25	5.00
18"	lf	85	10.75	10.00
RCP 36"	lf	30	25.00	25.00
VCP underdrain 6"	lf	16,034	1.20	1.10
MH std #1	ea	5	300.00	300.00
#2	ea	2	1,500	1,500
18" drop	ea	1	1,800	1,800
CB, A	ea	14	$300.00	$300.00
B	ea	14	410.00	410.00
#4	ea	1	300.00	300.00
& MH #14	ea	14	430.00	430.00
castings	ea	12	60.00	60.00
Conc cradle, 36" pipe	ea	1	100.00	100.00
Monument boxes	ea	4	45.00	45.00
MH castings adjust to gr	ea	4	25.00	25.00
Waterline v!v box to gr	ea	6	15.00	15.00
Stone underdrain	lf	45	1.00	1.00
Riprap	sy	112	10.00	10.00
Abandoned CD	ea	18	20.00	20.00
MH	ea	1	25.00	25.00
Topsoil, f & p 4"	sy	8,300	0.60	0.55
2"	sy	24,000	0.30	0.25
Seed & protect	sy	32,300	0.30	0.25
Commercial fertilizer	ton	3	100.00	100.00
Agric gr limestone	ton	15	40.00	40.00
Seal vertical pvmt face	lf	196	0.15	0.15
Asph conc base	cy	50	20.00	20.00
surface crse	cy	25	20.00	20.00
RC pvmt 9"	sy	25,650	6.50	6.10
8" drives	sy	20	6.40	6.40
CC pvmt drives 6"	sy	450	4.90	4.90
Curb 6" x 18", sandstone	lf	15,350	4.00	3.80
granite	lf	400	7.75	7.50
New sandstone bump block	lf	110	20.00	20.00
Guard rail	lf	1,840	3.00	3.00
Side approach material	sy	450	0.85	0.85
Insulation crse 3"	sy	26,188	0.85	0.70
Rdway culv RCCP 24"	lf	200	12.50	12.50
Conc, 24" pipe, headwall	ea	1	175.00	175.00
cradle	ea	1	75.00	75.00
Sanit sew VCP 8"	lf	175	10.00	9.75
30"	lf	470	35.00	33.00
CIP 30"-jts	lf	718	30.00	28.20
bridge	lf	376	40.00	39.00
MH std #1	ea	27	315.00	315.00
Exc bank, SW wingwall	cy	200	5.00	4.00
rock, for structs	cy	300	6.00	6.00
structs, earth	cy	3,700	5.00	4.00
rock	cy	700	15.00	22.00
Borrow, clay backfill	cy	320	4.00	4.00
Conc el E, pier footings	cy	225	30.00	30.00
C, abut ftgs	cy	475	30.00	31.00
brst wall	cy	965	60.00	63.00
pier shafts	cy	640	55.00	51.00
arch barrels	cy	1,125	93.00	121.00
br deck sts	cy	1,210	90.00	85.00
RC sidewalk 3"	sf	4,700	0.60	0.60
Waterproof A	sy	860	3.00	2.35
br sidewalk	sy	530	2.50	1.50
B	sy	100	5.50	4.00
C	sy	2,050	1.00	1.00
Reinf steel	lb	1,180,000	0.135	0.125
Str stl	lb	80,600	0.30	0.40
30" supports	ea	60	43.00	42.00
expansion jts	lb	16,800	0.30	0.30
Steel br railing	lf	711	18.00	21.00
Electric conduit system	ls	1	1,200	1,250
Name plates 18"x26" cst bronze	ea	2	200.00	200.00
Porous backfill	cy	310	8.00	6.00
Perf sew pipe 6"	lf	170	1.50	1.50
Subdrain wear crse	lf	1,430	1.10	1.10
Deck drainage system	ls	1	5,000	5,250
Poured jts, sidewalks	lf	3,200	0.15	0.15
"Sonovoid" fiber tubes	lf	2,100	0.75	0.75
RC approach slabs	sy	260	16.00	14.00
Asph conc surf crse 2½"	sy	2,050	2.20	2.15
Crane	hr	16	10.00	17.00
Air compressor	hr	50	4.00	6.00
Truck	hr	40	5.00	5.25
Skilled labor	hr	75	3.50	3.95
Intermediate gr labor	hr	100	3.00	3.00
Unskilled labor	hr	160	2.50	2.50
Barricades, warning sign	ls	1	1,291	1,291

La. drainage structure

Hu B. Meyers, Louisiana Dep't. of Public Works, designed the $60,430 drainage structure at Texas & Pacific Railway embankment across Bayou Lafourche at Donaldsville.

Operating engineers' minimum is $2.00 per hour.

Bids:

1C	Roland Contr Co., Alexandria, La	$60,430
2	Morrison Eng & Constr Co., New Roads, La.	67,290
7	Andry & Voss, New Orleans, La	83,197

Bids: 4-12-54 Item	Unit	Quantity	Unit Prices 1C	2
F&p 108" neut axis @ 5gs tunnel liner conduit	lf	350	$165.00	$185.00
Riprap	ton	260	13.00	20.00
Grout stone riprap	sq	26	100.00	40.00

CIMA works out financing plan to spur equipment exports

After 15 months of negotiations with the Export-Import Bank, the Construction Industry Manufacturers Assn. has worked out a financing plan designed to make it easier for American exporters to match liberal credit terms offered by foreign competitors. The bank, a government agency set up after World War II to encourage foreign trade, will guarantee up to 60% of the contract price of sales against credit risks.

The plan is effective immediately. To give details and answer questions, CIMA is calling a meeting of export, credit, and finance executives of its member companies on Aug. 26 at the Palmer House in Chicago.

The government bank (usually known as "Ex-Im") will grant exporters lines of credit of not more than $10 million in any one year, applying to deals which run for at least one year and for not more than five years. These lines will be extended by country and by dealer or customer doing recurrent business.

• **Credit Information**—To get this credit, the exporter will have to give Ex-Im complete information on his own business and complete information on the credit standing of proposed purchasers. Once the credit lines are set up, the exporter can apply them without prior approval of the bank, provided he is not selling to foreign government agencies. Financings for more than five years also will have to be OK'ed by Ex-Im.

Here's how the plan will work:

The exporter must get a down payment of at least 20% of the contract price. If he can't do this, he can finance the difference between the down payment he gets and 20%, provided he gets prior approval from Ex-Im.

The bank will give an "all-risk" guarantee of up to 75% of the balance remaining after the 20% down payment—in other words up to a maximum of 60% of the contract price. It also will guarantee 85% of the unpaid balance against all political risks.

• **Interest charges**—The foreign purchaser must pay at least 5% interest on the unpaid balance. In return for its guarantee, Ex-Im will charge the manufacturer 2% interest on the balance it guarantees. In addition, there will be a flat service charge of 1½% on the amount guaranteed in deals running from one to three years, and of 1¾% on those running from three to five years. For a guarantee against political risks only, the service charge will be ¾%.

• **An example**—For instance, suppose a manufacturer sells $100,000 of equipment to a foreign distributor or direct user. He gets a $20,000 down payment, leaving $80,000 to be financed. Ex-Im will guarantee $60,000 against credit risks, $68,000 against political risks, and will furnish the manufacturer with $60,000. Alternately, the manufacturer can take his foreign customer's note to a commercial bank, which will be able to take it over from him because of Ex-Im's guarantee. The manufacturer must himself carry the remaining $20,000. In effect, this means he is waiting for his profit.

The plan was worked out by the export finance committee of CIMA's Export Managers Division, headed by H. A. Shelby of Caterpillar Tractor Co. Caterpillar made Shelby's services available to CIMA for the period of the negotiations with Ex-Im.

Clark Equipment's new leasing plan

The year-long decline in new-equipment sales (ENR June 24, p. 90) has led to a considerable increase in rental and rental-option plans by distributors, seeking to move equipment out of their yards.

Last week, a manufacturer announced a formal plan designed to help rentals along. The firm is Clark Equipment Co., of Buchanan, Mich., which last year took over the Michigan line of construction equipment. Through a subsidiary, Clark Leasing Corp., the company offers either a straight lease or a lease with option to purchase. Lease terms are either for three or five years.

Dealers help to determine the credit rating of the customer, share part of the credit risk, and help with collections in case of delinquencies. In return, they get a commission on new equipment shipped from the factory, or if the equipment is leased out of their stock, they sell it to Clark Leasing.

Total rentals are determined by adding an appropriate percentage to the cash cost of the unit, depending on which type of lease is taken. The additional charge ranges from 5% for a three-year straight lease to 15% for a five-year lease with option to buy. On a three-year lease, 50% of this total rental is payable in the first year, 30% in the second, and 20% in the third. On a five-year lease, one-third of total rental is payable in the first year, and annual payments step down to one-fifteenth in the first year. Leases can apply to the net amount due after a trade-in allowance.

• **Distributor's side**—On a straight lease, the distributor agrees to buy the equipment for 5% of list at the end of the lease. He pays this by installments during the lease period. If the customer decides to extend the lease, the distributor gets all future rentals. On a lease-with-option, there are no payments by the distributor; at the end of the lease, the customer gets a bill of sale from Clark Leasing.

In case of a default on a straight lease, the distributor may either (1) buy the equipment for the unpaid rental plus his own payments or (2) return his commission. If the defaulter had a lease-with-option, the distributor can choose between buying the unit for the unpaid rental, or returning his commission.

Incidentally, Clark advises customers, who lease its equipment with an option to buy, not to treat the rentals as tax deductible. It believes such payments are similar to installment payments on a conditional sales agreement.

(B&F continued on page 152)

Hampton Roads award slated for October

The Virginia Department of Highways plans to open bids in early October for the Hampton Roads bridge-tunnel project and the proposed Rappahannock River bridge. The bridge-tunnel is expected to cost about $63 million and the Rappahannock bridge about $17 million. The department has set Oct. 14 as a tentative date to receive bids from underwriters on a revenue bond issue to finance the work.

Redoing Fanny May

Voluntary mortgage loan group starts to function

Sixteen regional subcommittees will function in their own territories to aid the flow of private mortgage credit under the new housing law. That setup of regional operating groups was decided upon last Friday at the first meeting of the new National Voluntary Mortgage Credit Extension Committee in Washington.

During congressional action on the housing bill, the voluntary credit committee grew into an important feature of the new two-pronged effort to develop a privately financed secondary market for mortgage paper, as a substitute for the old concept of a government-supported Federal National Mortgage Assn. The lending institutions—which have the major voice in the new committee—want to make it work as a useful tool for funneling money from surplus areas to places where the supply is short. In this way, they hope to make direct Veterans Administration loans unnecessary.

• **Committee makeup**—Of the fourteen members on the national committee, ten come from five types of financial institutions—life insurance companies, commercial banks, mortgage companies, savings and loan associations, and mutual savings banks. Builders and real estate boards also are represented, and there are advisers from government agencies interested in home financing, including the Federal Reserve Board. The regional committees will be similarly constituted.

Nominees for the regional groups will be chosen by the time the national committee meets again on Sept. 17. Housing chief Albert Cole, committee chairman, will appoint them.

Meanwhile, the committee is studying the national makeup of the mortgage market. For example, lending institutions are being asked to list the places where they have mortgage correspondents.

Regional operating committees will be headquartered in Boston, New York, Philadelphia, Washington, Charlotte, Atlanta, Nashville, Cleveland, Chicago, Minneapolis, Kansas City, New Orleans, Dallas, San Francisco, Portland (Ore.) and Salt Lake City. These regional subcommittees are the working groups that will spot tight mortgage areas and assist borrowers that cannot find lenders who will make eligible government-insured or guaranteed loans, or FHA or VA.

Turnpike authority ready for engineering surveys

The Richmond-Petersburg Turnpike Authority has invited several engineering firms to let it know within 30 days if they are interested in undertaking preliminary studies for the proposed 35-mi, $57-million Virginia toll road project.

Meanwhile, five Virginia engineering firms have banded together in an effort to keep the engineering contract in the state. As a joint venture, they expect to make a proposal to do the preliminary surveys. Exclusive of traffic and financial studies.

Arrangements have been completed for half the $200,000 risk capital loan. Four Richmond banks have offered to enable the turnpike authority to get preliminary work started before the revenue bond issue is floated.

The Old Dominion Turnpike Authority, concerned with a proposed 75-mi toll road across southwest Virginia to link the West Virginia Turnpike with the North Carolina border, also has raised money for preliminary surveys. It was announced last week that three investment banking firms have offered risk capital. An estimated $25,000 is required for a traffic and earnings survey. Other studies will require another $50,000.

Sell-lease decline?

New tax law cuts one big advantage of leasebacks

The new tax law may have quite an effect on the popular practice of selling property and leasing it back. Albert H. Cohen, of the American Institute of Accountants, points out in an article in this month's issue of the Journal of Accountancy.

The reason is quite simple. Deciding whether to own a property or whether to sell it and then lease it back is partly a question of deciding whether you will be better off tax-wise by deducting the depreciation of the property or deducting the rent you pay for the property from your taxable income. The new laws makes it possible for owners to depreciate their property much faster in early years, by use of the declining balance method (ENR July 29, p. 91). So sell-lease may become less popular.

Another result may be, Cohen suggests, that property users may decide to sell-lease the land on which their structures stand, and own the structures. That's because land cannot be depreciated, but buildings can.

Such setups already are used occasionally. For instance, Louis Glickman, well-known New York real estate operator, used it in connection with a Fifth Avenue office building (ENR May 6, p. 102).

IHC and Diamond T to help make each other's trucks

International Harvester Co. and Diamond Motor Car Co. have agreed to help each out on manufacturing their trucks.

Harvester has been looking for a midwest assembly plant for the larger, more specialized types of its line of International trucks. Its plant at Fort Wayne, Ind., was not practical for this purpose. But Diamond T has the space and personnel available in its Chicago plant to assemble the trucks.

In return, Harvester will supply components—including engines, transmissions, and some axle assemblies—to Diamond T. Harvester already has been supplying Diamond T with cab assemblies for several years.

The arrangement will have no effect on sales of the competing lines of trucks at the retail level.

Business briefs . . .

• **Profits** of manufacturers of construction materials were down during the first quarter of this year as compared with the same 1953 period, according to the periodic survey published by the Securities & Exchange Commission. Profits of the lumber and wood products industry were $14 million, compared with $46 million in the same 1953 period. Manufacturers of stone, clay, and glass products did better. Their profits were $68 million, compared with $77 million.

• **Available mortgage money** was boosted during the first half of this year as deposits of mutual savings banks increased a record $1,050 million. The National Association of Mutual Savings Banks reports that during this same period outstanding mortgage loans of savings banks increased $937 million.

• **Merritt-Chapman & Scott Corp.** earned $1,121,852 during the first half this year, compared with $1,108,167 for the same 1953 period. Gross revenues during the first half were $57.5 million, including sales of $7.6 million since March 1 by a newly acquired subsidiary, Newport Steel Corp. Last year, gross revenues were $44 million.

(*B&F continued on page 154*)

Six reels mounted on back of truck, plus one water hose on each side allow the Portable Service Station to service two pieces of equipment at once. Here a giant bulldozer and heavy "Cat" get in-the-field service—no lost time—complete lubrication protection!

Alemite units mount directly on flat truck bed. Lubricant is pumped direct from refinery drum, is delivered to bearings completely free of dust, grit or contamination. 40' high-pressure hoses reach out to serve many fittings on each stop.

here's how Alemite Portable Service Stations help

SMASH RECORDS ON THE BILLION DOLLAR NEW YORK STATE THRUWAY!

Alemite In-the-Field Lubrication helps Arcole Midwest Corporation meet tight time schedules!

The largest road-building project ever undertaken by man! That's the 427 mile, four lane, New York State Thruway. 80,000,000 cubic yards of earth to move—1,125,000 square yards of concrete to pour—countless underpasses—bridges, including two new ones across the Hudson. Cost, about a *billion* dollars! And the vast bulk of this mammoth undertaking will be completed within a year and a half, an amazing new record for this type of construction!

To meet this record-breaking pace on their part of this giant project, Arcole Midwest Corporation of Skokie, Ill., assembled 60 odd pieces of heavy earthmoving and grading equipment on their stretch of road outside Schenectady. And to keep that equipment in the top condition it has to maintain, they chose Alemite Portable Service Stations.

Heavy-duty pumps, hose reels, etc., are custom-mounted on a 2½ ton flat bed truck. Equipment is serviced right in the field for this *triple saving* . . . **1. Save Time!** By bringing complete power lubrication to all equipment right on the job—safely, efficiently! **2. Save Money!** By cutting expensive lubrication downtime—increasing output of both men and machines. **3. Save Equipment!** By greatly reducing the possibility of costly, time-consuming, bearing failure.

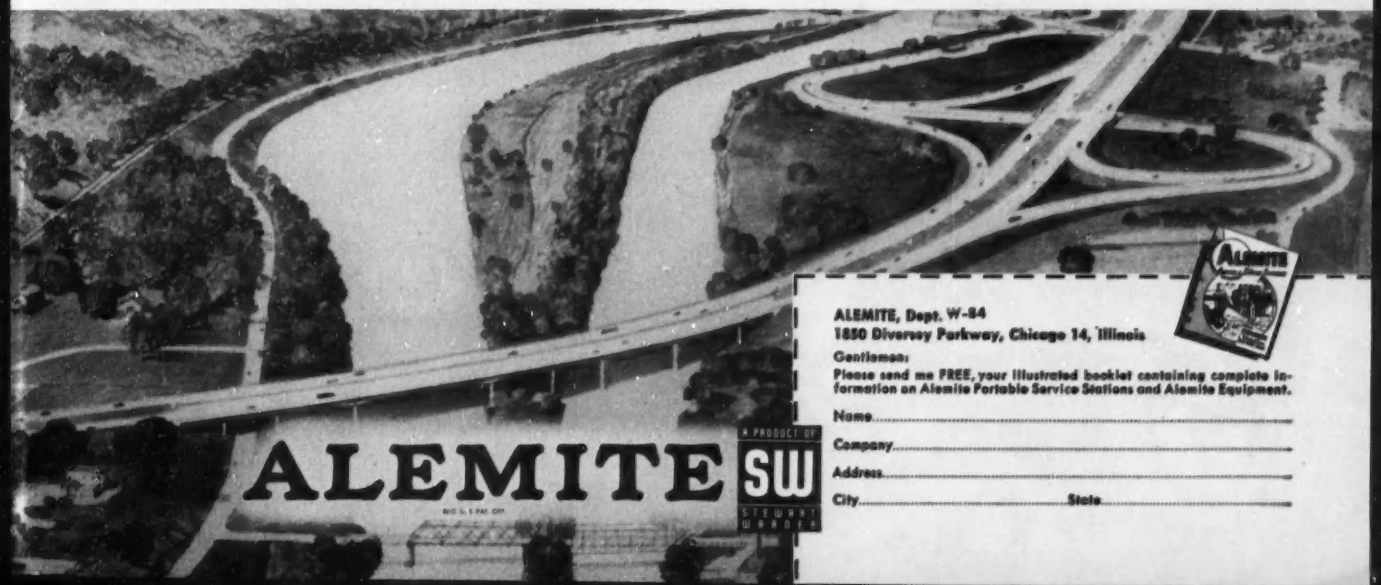
Alemite portable service stations
Offer these 4 Services

Fast, easy lubrication of truck rolls and fittings.

No oil wasted—use exact amount of lube required.

Quick filling of gear housings, transmissions, final drives.

Air line equipment for tire inflating—air jet cleaning.



ALEMITE

A PRODUCT OF SW STEWART WARNER

ALEMITE, Dept. W-84
1850 Diversey Parkway, Chicago 14, Illinois

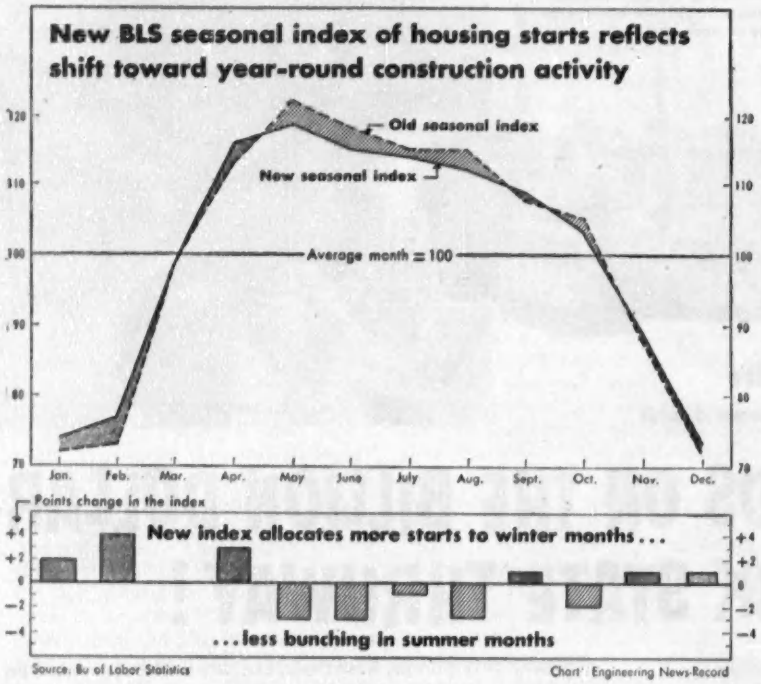
Gentlemen:
Please send me FREE, your illustrated booklet containing complete information on Alemite Portable Service Stations and Alemite Equipment.

Name.....

Company.....

Address.....

City..... State.....



THE LONGER LOOK:

To keep up with changes in the construction industry, BLS has revised its seasonal adjustment of housing starts

The buoyant report on new housing starts in June by the Bureau of Labor Statistics drew attention away from another recent announcement important to people who follow construction statistics. BLS is now issuing a new series on housing starts which reflects not only improved reporting and estimating techniques (ENR Aug. 5, p. 73) but a new seasonal index.

Many economists believe that a seasonal index is a big help in interpreting statistical reports, provided that the seasonal adjustment is realistic. This is especially true of construction, where weather conditions make for wide swings during the year. Only by a correct weighting of seasonal pattern can much sense be made out of housing starts, which typically jump 60% between January and May.

• **Industry changes**—Now BLS is recognizing that homebuilding no longer bunches up quite so heavily in the spring and summer months, and is changing its seasonal index. This is why: (1) Population changes have brought greater increases in housing construction in southern and southwestern states than in other parts of the U. S. (2) Through improved techniques, materials, and equipment, the construction industry has made itself less dependent on favorable weather conditions.

According to this new index, private nonfarm home starts in June were running at a booming annual rate of 1.2 million units. If this rate continues, the 1954 total could be second only to the record of 1.4 million set in 1950. And some optimists are predicting that next year the 1950 record will be broken.

The basis for this optimism is the liberalized financing features of the new housing law, plus the government's easy-money policy which has been a major factor in producing 575,000 starts during the first half. It should not be forgotten that the first half of this year was a period of general business downturn.

• **How BLS figures**—How does BLS calculate the running annual rate of private homebuilding from reports of housing starts in a single month?

The first step is the construction of a seasonal index from monthly records over a period of years, which indicates the typical month-to-month pattern. The index for each of the 12 months is expressed as a percentage of the average monthly number of housing starts—simply 1/12 of the annual number of starts. Thus, according to the new seasonal index, January normally has only 74% of its proportionate share of 1/12 of the year's housing starts, while August normally has 112% of its proportionate share. (The old and the revised seasonal indexes are shown in the chart.)

Second, the number of starts for any month is divided by the index for the month. This removes the effect of normal seasonal swings. Then this adjusted figure is multiplied by 12 to put it on a yearly basis, giving the annual rate for the month.

The number of private housing starts reported for June, for instance, was 115,600 units. Division by the June index of 115 gives a seasonally adjusted figure of 100,500 units. Multiplication of this figure by 12 then yields the annual rate of 1,206,000 units. The old index for June, 118 rather than 115, would show an annual rate smaller than this—only 1,176,000 units, or 30,000 fewer.

The new seasonal index shows a trend toward more regular year-round building activity, even though there is still a wide swing between the winter and the spring and summer months. In the new index, the months from November through April show higher proportions of housing starts (except March, which remains the same). The months from May through October (except for September) show, on the other hand, relatively smaller proportions of housing starts.

• **Higher means lower**—The timing of the announcement of the new seasonal index for private housing starts offers an interesting sidelight. The higher the index for any month is, the lower will be the annual rate calculated from any given figure for that month. The lower the index, the higher the annual rate.

The January, February and April indexes were from two to four points lower in the old series which was used for the first five months of this year. This meant that the reported starts in those months indicated *higher* annual rates than the revised seasonal index. From May to October all months except September have *lower* indexes in the new series. This means that higher annual rates will now result from applying the *new* index.

In time, it will all even out, but for most of this year it looks like eating your cake and still having it.

Activity This Week

As reported to ENR
(In millions of dollars)

Amount of contracts let

(millions of dollars)	This Week	Cumulative 33 wks 1954	Cumulative 33 wks 1953	% chge
Federal	$18.7	$798.1	$1,020.8	−22
State and municipal	83.1	3,095.5	3,146.9	−2
Total public	101.8	3,893.6	4,167.7	−7
Total private	157.1	5,231.8	5,638.8	−7
U. S. total	$258.9	$9,125.4	$9,806.5	−7

Contracts by type of work

Waterworks	$6.2	$142.8	$150.6	−5
Sewerage	5.0	239.4	260.3	−8
Bridges	11.0	312.6	394.4	−21
Highways	20.0	1,164.5	1,155.0	+1
Earthwork, waterways	4.8	174.5	270.8	−36
Buildings:				
Public, excl. hsg.	32.1	1,133.7	1,095.9	+3
Housg., public	3.4	158.8	288.7	−45
Housg., private	55.6	2,720.4	2,374.3	+15
Commercial	28.2	816.7	811.6	+1
Industrial	36.2	1,252.7	1,832.7	−32
Unclassified	56.4	1,009.3	1,172.2	−14
Total	$258.9	$9,125.4	$9,806.5	−7

NOTE: Minimum size projects included are: Waterworks and waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

New capital for construction

(millions of dollars)	Week of Aug. 12 1954	Cumulative 32 Wks 1954	% chge '53-'54
Corporate securities	$27.7	$1,930.5	−38
State and municipal:			
All except housing	59.0	3,466.8	+27
Housing	...	69.9	−67
Federal loans	1.6	77.4	−7
Federal aid	...	630.0	−17
Total non-federal	$88.2	$6,174.6	−11
Federal appropriations:			
In U. S.	...	$1,126.0	−27
Outside U. S.	...	28.4	−1
Total new capital	$88.2	$7,329.0	−13

ENR cost and volume indexes, 1954

		Base years = 100 1913	1926	1949
Construction cost	8/12	640.17	307.73	134.20
	7/29†	642.05	308.63	134.60
Building cost	8/12	454.31	245.59	129.14
	7/29†	455.51	246.23	129.48
Volume	July	547	222	158
	June	510	207	147

† Official ENR indexes for Aug. 1
For additional cost index data, see Construction Daily

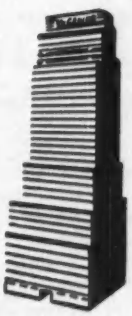
If Your Government Contract....

...or Your Regular Product Requires MANUALS

Call in the McGraw-Hill Technical Writing Service

- OPERATION
- SERVICE
- OVERHAUL
- PARTS CATALOG
- TRAINING

Whether you need one or a set of manuals written and illustrated precisely to meet Government specifications or whether your products are such that instructions on their proper installation, operation, and service must be provided Technical Writing Service can do the job for you . . . efficiently . . . effectively . . . economically. Technical knowledge and writing skill are the keynotes of our service.



Write or Phone

TECHNICAL WRITING SERVICE
McGraw-Hill Book Company, Inc.
330 West 42nd Street
New York 36, New York

Tel: LOngacre 4-3000

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $1.80 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Bids: August 25, 1954

Construction of Sanitary Sewer

CONSTRUCTION OF TRUNK SEWER NO. 4
SOUTH AVENUE (STA. 48+49.2 TO STA. 51+69.7)
SOUTH AVENUE TO W. WINDING RD. & YATES BLVD.
CONTRACT NO. 2
CITY OF POUGHKEEPSIE, DUTCHESS COUNTY, NEW YORK

Sealed bids for Contract No. 2, South Avenue (Sta. 48+49.2 to Sta. 51+69.7) South Avenue to W. Winding Rd. and Yates Blvd. for the construction of a Sanitary Sewer will be received by the Commissioner of Finance, City Hall, Poughkeepsie, New York until 10:00 A.M., Daylight Saving Time, Wednesday, August 25, 1954, and there at said office and at said time will be publicly opened and read aloud.

Contract No. 2 includes the construction of approximately 324 linear feet of 33-inch diameter sewers and approximately 3200 linear feet of 10-inch diameter sewers and appurtenances.

Plans and Documents may be examined at no expense at the office of the Commissioner of Finance, City Hall, Poughkeepsie, New York, and copies of the same obtained there upon payment of $10.00 for each set. Any bidder upon returning said set in good condition within thirty (30) days of the date of receiving bids will be refunded his payment, and any non-bidder upon so receiving said set will be refunded $5.00.

The Plans and Documents may be examined in the office of the Superintendent of Public Works, Eastman Park, Poughkeepsie, New York, or at the office of O'Brien & Gere, Consulting Engineers, 204 East Jefferson Street, Syracuse, New York.

Each bid must be accompanied by security in amount not less than five per centum (5%) of the amount of the bid in the form and subject to the conditions provided in the Information for Bidders contained in the Contract Documents.

The right is reserved to waive any informalities in the bids and to reject any or all bids.

DEPARTMENT OF FINANCE OF THE CITY OF POUGHKEEPSIE
By: AUBREY B. COONS
Commissioner of Finance

Bids: September 8, 1954

Indiana Toll Road

INDIANA TOLL ROAD COMMISSION
309 W. Washington Street
Old Trails Building
Indianapolis, Indiana
NOTICE TO BIDDERS

Contract C-51
Contract C-52
Contract C-53
Contract C-51 and C-52
Contract C-52 and C-53
Contract C-51, C-52 and C-53

Sealed proposals will be received by the Indiana Toll Road Commission at or before 10:00 A.M., Central Standard Time, September 8, 1954 for the performance of each of the contracts enumerated above.

Contract No. C-51

The grading, drainage, structures and paving for approximately 3.2 miles in Construction Section C-51 of the Indiana East-West Toll Road beginning at a point about 4,555 feet northwest of the intersection of the Toll Road Centerline and State Route 120 at Toll Road Centerline Station 7847+00 in Steuben County and extending easterly and southeasterly to a point about 879 feet southeast of the intersection of the Toll Road Centerline and State Route 827 at Toll Road Centerline Station 8014+00 in Steuben County, Indiana. The approximate quantities of the major items of construction are as follows:

Common Excavation	865,000 Cubic Yards
Borrow	348,000 Cubic Yards
10" Reinforced Concrete Pavement	91,600 Square Yards
Culvert Pipes and Underdrains	10,480 Lineal Feet
Cast-in-Place Concrete Piling	8,700 Lineal Feet
Concrete for Structures	4,660 Cubic Yards
Reinforcing Steel	637,300 Pounds
Fabricated Structural Steel	1,061,300 Pounds

Contract C-52

The grading, drainage, structures and paving for approximately 4.1 miles in Construction Section C-52 of the Indiana East-West Toll Road beginning at a point about 879 feet southeast of the intersection of the Toll Road Centerline and State Route 827 at Toll Road Centerline Station 8014+00 in Stueben County and extending southeasterly to a point about 4,600 feet northwest of the intersection of the Toll Road Centerline and Burch Road at Toll Road Centerline Station 8232+00 in Steuben County, Indiana. The approximate quantities of the major items of construction are as follows:

Common Excavation	589,000 Cubic Yards
10" Reinforced Concrete Pavement	116,200 Square Yards
Culvert Pipes and Underdrains	12,920 Lineal Feet
Cast-in-Place Concrete Piling	8,000 Lineal Feet
Concrete for Structures	3,210 Cubic Yards
Reinforcing Steel	484,400 Pounds
Fabricated Structural Steel	1,139,000 Pounds

Contract No. C-53

The grading, drainage, structures and paving for approximately 5.1 miles in Construction Section C-53 of the Indiana East-West Toll Road beginning at a point about 4,600 feet northwest of the intersection of the Toll Road Centerline and Burch Road at Toll Road Station 8232+00 in Steuben County and extending southeasterly and easterly to a point in the Indiana-Ohio State line about 3,668 feet east of the intersection of the Toll Road Centerline and U. S. Route 20 at Toll Road Station 8500+00 in Steuben County, Indiana. The approximate quantities of the major items of construction are as follows:

Common Excavation	1,076,000 Cubic Yards
Borrow	8,000 Cubic Yards
10" Reinforced Concrete Pavement	142,300 Square Yards
Culvert Pipes and Underdrains	28,290 Lineal Feet
Cast-in-Place Concrete Piling	14,400 Lineal Feet
Concrete for Structures	7,370 Cubic Yards
Reinforcing Steel	1,218,500 Pounds
Fabricated Structural Steel	2,049,000 Pounds

The work covered by Contract C-51, C-52 and C-53, which covers a combination of Construction Sections C-51 and C-52, C-52 and C-53, C-51, C-52 and C-53, is the construction as above described for the individual Construction Sections, taken together.

Copies of the Plans, Specifications and Proposal Forms for said Contracts are available for public inspection or purchase at the office of the Chief Engineer, Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are non-returnable:

Standard Specifications for the Indiana East-West Toll Road	$ 5.00
Plans, Special Provisions and Proposal Forms, per set, per Construction Section	$25.00
Informational Drawings	
Cross-Sections, per set, per Construction Section	$25.00
Soil Plan and Profiles, per set, per Construction Section	$ 5.00

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Contractor's statement for qualification on the forms supplied by the Commission will be required from all Bidders.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of five (5%) percent of the total price bid per Construction Section covered by the Contract. If the Bidder shall tender bids for two or more Contracts which include the same Construction Section, the Construction Section thus duplicated in the bidding need be counted only once in determining the total amount of the Proposal Guaranty. The Proposal Guaranty shall be in the form of an acceptable surety bond or a certified check on a solvent bank.

If the Bidder is an out of state corporation, he shall be required to furnish a certificate from the Secretary of State of Indiana as evidence that the corporation has complied with the Indiana Foreign Corporation Statutes, and that the corporation is authorized to transact business in the State of Indiana.

All bids must be received at or before 10:00 A.M., Central Standard Time, September 8, 1954, in the offices of the Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. At said hour, the bid box will be publicly opened and the bids read.

The award of any of the above-enumerated Contracts if any award be made, will be to the Bidder or Bidders whose Proposal or combination of Proposals is lowest and best for the performance of the work, taken as a whole, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

INDIANA TOLL ROAD COMMISSION
Charles W. Keating, Secretary-Treasure
Dr. Dillon Geiger, Chairman

U. S. Government

Bureau of Reclamation North Platte River District 72854-P1 Casper, Wyoming For Immediate Release July 27, 1954 UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-349 for furnishing labor and materials and performing all work for the construction of Bridgeport Substation, Transmission Division, Nebraska, Missouri River Basin Project, will be mailed to Box 280, Casper, Wyoming, or delivered to the office of the Bureau of Reclamation in time for the public opening at 10:30 a.m., Mountain Standard Time, September 2, 1954, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: R. J. Walter, Jr., Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all others $0.75 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

I. J. Matthews
District Manager

OFFICIAL PROPOSAL

RATE: $1.80 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

OFFICIAL PROPOSALS

Bids: August 27, 1954

Construction of 36-inch Diameter Water Supply Main

ARLINGTON COUNTY, VIRGINIA

Sealed proposals for furnishing all materials and equipment and doing all work required for the construction of a 36-inch diameter water supply main, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 3:00 P.M., Eastern Daylight Saving Time on August 27, 1954, and there publicly opened and read immediately thereafter:

CONTRACT 2A

CONSTRUCTION OF 36-INCH DIAMETER WATER SUPPLY MAIN AND APPURTENANCES

1. Location: The work is located in Arlington County, Virginia, on public streets and on County or Government owned right-of-ways from N. Glebe Road to 30th Street, N.
2. Type of Work: The principal items of work include the following:— Approximately 6200 lin. ft. of 36-inch steel or reinforced concrete water pipe together with manholes, 24-inch diameter cone valves, miscellaneous gate valves, blow-off, air release or inlet valves, connections to existing water mains, etc.
3. Copies of Plans and Specifications, Information For Bidders, Bid Forms and other bidding and contract documents may be examined at the office of the Chief Engineer of the Water Division, County Court House, Arlington, Va.; at Dodge Reports, 900 F. Street, Washington, D. C. and at the Office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH ST., NEW YORK (7) N. Y.
4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia upon deposit of THIRTY ($30.00) DOLLARS PER SET.

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) Percent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or non-resident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the Treasurer of Arlington County as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bid within Thirty (30) Days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: A. T. Lundberg
County Manager

Notice to Advertisers

Because of the Labor Day Holiday the Proposal pages of the

Sept. 9th Issue of

ENGINEERING NEWS-RECORD

Close for press earlier than the usual weekly closing time.

The cooperation of advertisers is solicited in forwarding new copy, or changes of copy, to reach us accordingly.

FINAL CLOSING TIME
Official Proposal Ads
Thursday, Sept. 2, 10: A.M.

OFFICIAL PROPOSALS

Bids: September 2, 1954

Construction of Water Transmission Line

NOTICE TO CONTRACTORS: The City of Jacksonville, Illinois will receive sealed bids for the construction of a 23-mile Raw Water Transmission Line, 24" and 30" in diameter, Horizontal Water Collector, Pumping Station and appurtenant equipment.

Proposals will be received until 1:00 P.M. central daylight time, Thursday, September 2, 1954, a proposal bond will be required. The work will be divided into the following contracts:

Contract "A" Furnishing of Material
Contract "B" Installation of Material
Contract "C" Combination of Contract "A" and "B"
Contract "D" Horizontal Water Collector
Contract "E" Pumping Station Equipment and appurtenances
Contract "F" Combination of A,B,C,D, and E.

Copies of the Plans, Specifications and Contract Documents may be seen at F. W. Dodge Corporation, office, 721 Olive St., St. Louis, Mo. and 700 Merchandise Mart Building, Chicago, Illinois.

Plans, Specifications and Contract Documents may be obtained from the office of Casler and Stapleton, Consulting Engineers, 313 W. State Street, Jacksonville, Illinois upon a deposit of $75.00 which sum will be refunded to each bidder. All proposals must be on forms and Contract Documents prepared by the City.

Ernest L. Hoagland, Mayor

Bids: August 31, 1954

State Road Work

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Department for:

ROUTE 29 (1927) U. S. 22 (1953), SECS. 3D,1E,2F,4G & 9E

Route 29 (1927) Route U. S. 22 (1953), Sections 3D, 1E, 2F, 4G and 9E, from Empire Street, Newark, to Mountain Avenue, North Plainfield, Partial Repaving, Essex, Union and Somerset Counties. Federal Project No. F-178(11). Length 7.970 miles. The principal items of work are:

Estimated:	Roadway Items
24,504	cu. yds. Roadway Excavation, Unclassified
35,828	sq. yds. Pavement Excavation
19,750	cu. yds. Subbase
20,336	sq. yds. Stone Base Course, 6" thick
20,336	sq. yds. Penetration Macadam Surf. Course, 2" thick
2,150	sq. yds. Pavement Type MA-BC-2, 3" thick
42,700	sq. yds. Concrete Pavement Surf., Rein. 10" thick
760	lin. ft. Reinforced Concrete Culvert Pipe
345	lin. ft. Cast Iron Culvert Pipe
24	Inlets & Manholes
17,220	lin. ft. Concrete Curb
4,387	sq. yds. Removal of Mortar Bed & Mortar Protection Course
	Bridge Items
112	cu. ft. Headers and Curb

Bids for the above will be received at the office of the State Highway Department, in the CAFETERIA, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, August 31, 1954, at NINE o'clock (9:00 A. M.—EASTERN STANDARD TIME), TEN o'clock (10:00 A. M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plan and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements, and by P. L. 413, 82nd Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 309 Washington Street, Newark, N. J.; 1115 East Jersey Street, Elizabeth, N. J., and 6 Somerset Street, Plainfield, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning

OFFICIAL PROPOSALS

the contract. The minimum wage paid to all unskilled labor employed on this contract shall be $0.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished upon payment of a fee of Ten Dollars ($10.00) which will not be refunded for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed:
STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: August 26, 1954

New Jersey Turnpike Authority

CONTRACT NO. PE-2

Proposals are invited for Contract No. PE-2 which involves the construction of embankment in the vicinity of the east abutment of the Delaware River Turnpike Bridge, near the Town of Florence in Burlington County, New Jersey, all in connection with the construction of the Pennsylvania Extension of the New Jersey Turnpike.

The principal item of work is:
Borrow Excavation..340,000 Cu. Yds.

Proposals will be received at the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock Eastern Daylight Saving Time, on the morning of August 26, 1954, at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after August 13, 1954, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

OFFICIAL PROPOSALS

appear here each Thursday. Proposal advertisements accepted up to 10:30 a.m. Friday for the issue dated the following Thursday.

OFFICIAL PROPOSALS

Bids: September 9, 1954

Viaduct Superstructure, Philadelphia, Pennsylvania

DELAWARE RIVER PORT AUTHORITY
Administration Building
Camden, New Jersey
CONTRACT NO. P-3

Sealed bids will be received for Viaduct Superstructure, Philadelphia Anchorage to Second Street, for new Bridge between Packer Avenue, Philadelphia, Pennsylvania, and Gloucester, New Jersey, known as Contract No. P-3, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey, until 2:00 P.M., (Daylight Saving Time), September 9, 1954, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $400,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a performance and Labor and Materialmen's Bond in the sum of 100 per cent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
Executive Director

Bids: September 1, 1954

Indiana Toll Road Commission

309 Wast Washington Street
Old Trails Building
Indianapolis, Indiana

NOTICE TO BIDDERS
CONTRACT C-24 CONTRACT C-25
CONTRACT C-24 and C-25

Sealed proposals will be received by the Indiana Toll Road Commission at or before 10:00 A.M., Central Standard Time, September 1st, 1954 for the performance of each of the contracts enumerated above.

CONTRACT NO. C-24

The grading, drainage, structures and paving of approximately three and five-tenths (3.5) miles on Construction Section C-24 of the Indiana East-West Toll beginning at Station 3460 plus 80 on the Toll Road Centerline, said point being in Section Sixteen (16), Township Thirty-Eight (38) North, Range One (1) West, LaPorte County, approximately nine hundred twenty-four (924') feet West of the County line between LaPorte and St. Joseph Counties, and extending Easterly to Station 3645 plus 55 on the Toll Road Centerline, said point being approximately one thousand ninety-nine (1099') feet East from the West line of Section Seven (7), Township Thirty-Eight (38) North, Range One (1) East, St. Joseph County, Indiana. The approximate quantities of the major items of construction are as follows:

Common excavation 299,000 cubic yards
Borrow 73,800 cubic yards
10" Reinforced concrete pavement 97,900 square yards
Culvert pipes and underdrains 6,934 lineal feet
14" dia. x 7 ga. cast in place piling 5,200 lineal feet
Concrete for structures 1,634 cubic yards
Reinforcing steel 238,200 pounds
Fabricated structural steel 493,600 pounds

CONTRACT NO. C-25

The grading, drainage, structures and paving of approximately three and nine-tenths (3.9) miles on construction section C-25 of the Indiana East-West Toll Road beginning at Station 3645 plus 55 on the Toll Road Centerline, said point being approximately one thousand ninety-nine (1099') feet east from the west line of Section Seven (7), Township Thirty-Eight (38) North, Range One (1) East, St. Joseph County, and extending easterly to Station 3851 plus 10 on Toll Road Centerline, said point being approximately five thousand one hundred twenty-two (5122') feet east of Sycamore Road, St. Joseph County, Indiana. The approximate quantities of the major items of construction are as follows:

Common excavation 588,500 cubic yards
Borrow 91,200 cubic yards
10" Reinforced concrete pavement 108,500 square yards
Culvert pipes and underdrains 4,954 lineal feet
14" Dia. x 7 Ga. cast in place piling 7,700 lineal feet
Concrete for structures 2,768 cubic yards
Reinforcing Steel 386,150 pounds
Fabricated Structural Steel 675,900 pounds

Notice to Bidders

The work covered by Contract C-24 and C-25, which covers a combination of construction Sections C-24 and C-25, is the construction as above described for the individual construction sections. Taken together.

Copies of the plans, specifications and proposal forms for said contracts are available for public inspection or purchase at the Office of the Chief Engineer, Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis Indiana. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are non-returnable.

Standard Specifications for the Indiana East-West Toll Road—$5.00
Plans, Special Provisions and Proposal Forms, per set per construction section: $25.00
Informational Drawings
Cross-sections, per set, per construction section: $25.00
Soil Plan and Profiles, per set, per construction section: $5.00

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Contractor's statement for qualification on the forms supplied by the commission will be required from all bidders

Each proposal must be accompanied by a proposal guaranty in the amount of Five (5%) percent of the total price bid per construction section covered by the contract. If the bidder shall tender bids for two or more contracts which include the same construction section, the construction section thus duplicated in the bidding need be counted only once in determining the total amount of the Proposal guaranty. The Proposal guaranty shall be in the form of an acceptable surety bond or certified check on a solvent bank.

If the bidder is an out of state corporation, he shall be required to furnish a certificate from the Secretary of State of Indiana as evidence that the corporation has complied with the Indiana Foreign Corporation Statutes, and that the corporation is authorized to transact business in the State of Indiana.

All bids must be received at or before 10:00 A.M. Central Standard Time, September 1st, 1954, in the oilices of The Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. At said hour, the bid box will be publicly opened and read. The award of any of the above-enumerated contracts, if any award be made, will be to the bidder or bidders whose proposal or combination of proposals is lowest and best for the performance of the work, taken as a whole, and complies with all the prescribed requirements. The commission reserves the right to reject any or all proposals and to waive technicalities.

Indiana Toll Road Commission
Dr. Dillon Geiger, Chairman
Charles W. Keating, Secretary-Treasurer
H. D. Hartman, Chief Engineer

Bids: August 31, 1954

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a. m., Eastern Daylight Saving Time, the 31st day of August 1954, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read aloud for the following contract.

For the construction of structures and the grading, drainage and paving of the Turnpike Section 35-G, part of the Northeastern Extension of the Pennsylvania Turnpike in Milford Township, Bucks County and Lower Milford Township, Lehigh County, Commonwealth of Pennsylvania, this section being situated as follows:

Beginning at a point approximately 2,520 lin. ft. southeast of the center line of Legislative Route 923 at Turnpike Station 236+00 in Milford Township, Bucks County; thence in a northwesterly direction through an equality at the Bucks/Lehigh County Line 28,143 lin. ft. to Turnpike Station 167+10, at a point approximately 5,734.5 lin. ft. northwest of the center line of L. R. 39002 in Lower Milford Township, Lehigh County, a distance of approximately 5.33 miles.

The approximate quantities of the principal items are as follows:

Class I Excavation	1,469,021 cu. yds.
Class 2 Excavation	26,981 cu. yds.
Class 2-A Excavation	2,940 cu. yds.
Special Subgrade	274,301 sq. yds.
Reinforced Concrete Pavement	166,686 sq. yds.
Class A Concrete	2,926 cu. yds.
Class B Concrete	3,942 cu. yds.
Plain Steel Bars	732,563 lbs.
Fabricated Structural Steel	1,125,700 lbs.
Median Divider	27,152 lin. ft.

Copies of plans, specifications and other contract documents, including cross-sections, are on file and open to public inspection at the office of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on August 17, 1954. Plans, specifications, cross-sections and other contract documents will be available by this date for inspection or for mailing to prospective bidders. Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5) dollars per copy. Copies of cross-sections may be purchased from the Pennsylvania Turnpike Commission for the sum of fifty (50) dollars per set.

Plans and contract documents, for this section exclusive of cross-sections and specifications, may be purchased from the Pennsylvania Turnpike Commission for the sum of twenty (20) dollars for each set. No refund will be made for plans returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P.O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications, contract documents, and cross-sections.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4219) will be received at Rock Springs, Wyoming, until August 26, 1954, for furnishing labor and materials for earthwork and structures, West Side Lateral, sublaterals and wasteway, Eden Project. Location near Farson, Wyoming. Principal items are 238,000 cu. yds. excavation; 690 cu. yds. concrete; 3,110 lin. ft., furnish and lay standard strength concrete culvert pipe and HC-50 concrete-pressure pipe; lump sum, furnish and install 33 cast-iron slide gates, 18-, 24-, and 36-inch diameters; 6,360 lbs. miscellaneous metalwork; and other work. Completion time 480 days. For particulars, address Bureau of Reclamation, Rock Springs, Wyoming; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

(Continued on opposite page)

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

Bids: August 27, 1954

Construction of Sanitary Sewers and Stormwater Drain

August 11, 1954

City of Springfield, Massachusetts
Department of Streets and Engineering

Separate sealed bids, addressed to the Board of Supervisors of the Department of Streets and Engineering of the City of Springfield, Massachusetts, for the Construction of Sanitary Sewers and Stormwater Drain in the Ashland Ave. and Wilbraham Road Districts will be received at the office of the Superintendent of Department of Streets and Engineering, Administration Building, Springfield, Massachusetts, until 12 o'clock noon August 27, 1954, and immediately following that time will be publicly opened and read aloud in Room No. 212, Administration Building.

The Information for Bidders, Form of Proposal, Form of Contract, Plans, Specifications and Forms of Performance Bond may be examined without charge at the office of the Superintendent of the Department of Streets and Engineering, Room 326, Administration Building, Springfield, Massachusetts.

Copies of the contract drawings, specifications, contract and other forms as set forth above may be obtained at the office of the Superintendent of the Department of Streets and Engineering, Room 326, Administration Building, Springfield, Massachusetts. A deposit of Ten Dollars ($10.00) will be required for each set of plans and specifications. Provided the documents are returned in good condition within thirty (30) days after the date of receiving proposals, these deposits will be refunded in full.

Each proposal shall contain the full name and address of the party or parties making the same, and all persons interested therein, and must be accompanied by a certified check on a solvent bank in the sum of 5% of total bid price made payable to the City Treasurer, Springfield, Massachusetts, and to be by it held as a guaranty that in the event the bid is accepted and a contract awarded to the bidder, the contract will be duly executed and its performance properly secured, and in default thereof, said check and the amount represented thereby will be forfeited to the City as liquidated damages.

The successful bidder will be required to furnish a Performance Bond, satisfactory to the Board of Supervisors, in a sum not less than one hundred per centum (100%) of the total price bid for the completed work, said bond to be that of an approved surety company or approved surety companies authorized to transact business within the State of Massachusetts.

Each proposal must be made upon the blanks furnished with the Contract Drawings and Specifications and delivered at the office of the Superintendent of the Department of Streets and Engineering, Administration Building, Springfield, Massachusetts, Previous to 12 o'clock noon, on the day specified.

No bidder may withdraw his bid for a maximum period of thirty (30) days after the actual date of the opening thereof.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

The City reserves the right to waive any informalities or irregularities in the bids received, and to reject any or all bids.

CITY OF SPRINGFIELD,
MASSACHUSETTS
By Its Board of Supervisors of the
Department of Streets and Engineering
James J. Sullivan, Superintendent

CONTRACTORS WATCH THIS SECTION

for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

EMPLOYMENT

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED: Instructor of Engineering Drawing and descriptive geometry. Salary up to $4,700 for 9 month period and assistant professorship for qualified person. M. E. graduate preferred. Dept. of Engr. Drawing, University of North Dakota, Grand Forks, North Dakota.

CITY ENGINEER — City of Montebello, California (pop. 25,000) invites applications. California registration with one year of experience in municipal government in administrative capacity. Salary range—$629-703. Maximum age 65. Apply by September 1, 1954 to Personnel Officer, City Hall, 140 North Sixth Street, Montebello, California.

FIELD SUPERINTENDENT, experienced, for large scale seeding work in several eastern states. Permanent. Steve Brody Inc., Lynbrook, N. Y.

ENGINEERS, COMPETENT and experienced in design and supervision of construction and as resident engineers on water works, sewer systems, sewage and water treatment. State experience, when available, salary requirements, references. P-3452, Engineering News-Record.

SUPERINTENDENT FOR Transit-Mix Plant—to run plant in central part of New Jersey. State experience and salary required. Reply P-3589, Engineering News-Record.

POSITIONS VACANT

WANTED EXPERIENCED structural steel detail draftsman for small shop doing general fabricating business in Class A structural steel for buildings. Man must be fast, thorough and accurate. Give age, experience, references and salary expected with application. Berger Steel Company, Inc., Lafayette, Ind.

CLERK OF the Works. Heavy experience in large building projects to serve as Resident Engineer on construction of High School starting September. Send resume of education, experience and salary expected to Herman J. Connors, Business Manager, Board of Education, Passaic, New Jersey.

LARGE EASTERN contracting company engaged in heavy construction desires man to fill position as superintendent of equipment maintenance. Position permanent for right man. Include education, experience, references, and salary expected in application letter. Reply P-3556, Engineering News-Record.

COLORADO COLLEGE has a vacancy for an instructor or assistant professor in Civil Engineering, salary approximately $4000 for nine months, rank and salary to vary according to qualifications and experience. Write Dean Sterg O'Dell, Colorado College, Colorado Springs, Colo.

ESTIMATOR AND Management assistant for medium sized iron work fabricating shop in Detroit, Michigan—structural steel, stair and fire escape work and miscellaneous iron work for building construction. Experience essential, bid pricing also technical knowledge in design and fabrication. State qualifications and salary desired. P-3538, Engineering News-Record.

(Continued on the following page)

BRIDGE ENGINEERS AND SPECIFICATION WRITERS

Civil Graduates of accredited U. S. colleges. Must have not less than the following experience:

Detailers—2 years structural steel or reinforced concrete detailing.

Designers—5 years responsible work on structural steel and concrete including work on long span bridges.

Squad Leaders—3 years responsible charge of squad on structural steel detailing.

Specification Writers—With design and field experience for writing specifications for steel bridges, concrete structures, and highway construction.

Please mail complete resume together with salary required to:

Howard, Needles, Tammen & Bergendoff
55 Liberty Street New York 5, N. Y.

WANTED

Designing engineers, highways-thruways, bridges, airfields, drainage, sanitation, hydraulic, soil mechanics, structural.

Draftsmen, designers, to Project Manager.

Submit resume
SEELYE STEVENSON VALUE & KNECHT
101 Park Ave. New York 17, N. Y.

EXPORT SALES TRAINEES

Excellent opportunities now exist in our Export Sales Department for recent college graduates with training in Civil, Agricultural, or Mechanical Engineering; or related fields. Foreign assignments are made upon completion of training.

Men interested in these openings are invited to call or write to:

EMPLOYMENT DIVISION
CATERPILLAR TRACTOR CO.
PEORIA, ILLINOIS

WANTED: ASSOCIATE PLANNER

Salary range $450-525 a month. Annual increases are automatic. Applicants should have training and experience in design. Applications will be accepted until the needs of the service are filled. Write Personnel Division, City Hall, Madison 3, Wis.

ENGINEERS
Foreign Service

Graduate Chemical, Mechanical, Electrical & Construction Engineers with minimum of 5 years' experience. For specialized assignments commensurate with qualifications in various phases of construction, estimating materials and cost control, planning and refinery process work. Write giving full particulars regarding personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 30

Arabian American Oil Company

505 Park Avenue, New York 22, N. Y.

DESIGN ENGINEER

Major Petroleum Company has excellent opportunity in Engineering and Construction Dept. for number 2 man in Drafting Div. of approximately 90 people. Must be graduate engineer (preferably Mechanical) with demonstrated ability to direct and coordinate work of drafting groups. Should have at least 10 years' experience with all phases of design, layout and drafting. Must be familiar with engineering calculations, specifications, materials, codes and engineering and construction methods with emphasis on process piping, pressure vessel, mechanical, structural, electrical, architectural and instrument work.

If you are now earning in the neighborhood of $10,000. and looking for a real opportunity to advance, send resume in confidence to Mr. H. M. Overley, P. O. Box 7258, Philadelphia 1, Pa.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)

$1.80 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

PROPOSALS, $1.80 a line an insertion.

INFORMATION:

BOX NUMBERS count as 1 line additional in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:

The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

Send NEW ADVERTISEMENTS: To New York Office W. 42nd St., N. Y. 36 for September 2nd issue closing August 23rd.

WANTED

Experienced Construction Equipment Salesman to sell Heavy Construction Equipment on Long Island

Salary—Commission—Expenses—Company Car

Call for Appointment

The Jaeger-Lembo Machine Corp.

127-04 Northern Blvd., Corona, N. Y.

Newtown 9-7777

MECHANICAL ENGINEER WANTED

Graduate Mechanical Engineer experienced in pulp and paper maintenance for large progressive mill in Middle Atlantic States. Under 35 years of age. Good salary with excellent opportunity for advancement. Give detailed resume of experience.

P-3547, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

POSITIONS VACANT

CHIEF ESTIMATOR, General Contractor operating in South and Midwest desires experienced building estimator. Excellent opportunity for man able to accept full responsibility with aggressive, growing concern. Reply fully, stating, experience, personal data and salary requirements to Blount Brothers Construction Company, P O Box 1144, Montgomery, Alabama.

ESTIMATING OPPORTUNITY—Recent graduate with some field experience on commercial and industrial building for quantity surveys. Opportunity for man interested in estimating with well established firm, headquarters Central Illinois. State qualifications & salary expected. P-3549, Engineering News-Record.

CIVIL, HIGHWAY, Drainage and Bridge Engineers, Designers, Specification Writers, Cost Estimators, Draftsman, and Surveyors for Permanent assignment on Airport, Highway, Expressway and Bridge Projects. Location East and Southeast States. An opportunity for producers of quality work. Submit resume, age, education, experience, title and duties, references, salary required, and availability. P-3593, Engineering News-Record.

EXPERIENCED STRUCTURAL Engineers Highway Bridge design up-state New York area include education, experience and salary expected in application. P-3655, Engineering News-Record.

TRAFFIC ENGINEER—Staff position. Complete charge broad traffic program progressive Ohio City. Salary $4560-$5760. Personnel, Municipal Building, Hamilton, Ohio.

CIVIL ENGINEER, youthful. Service Discharge, estimating, layout, direct work crews efficiently for underground City Public Utility Lines and structures, roads and related activities. C. P. Ward, Inc., 700 Hollenbeck Street, Rochester 21, New York.

MALE HELP Wanted: For permanent position in Rocky Mountain area—Bridge Designer with minimum five years experience designing highway bridges. Send detailed summary of experience and training together with minimum salary acceptable. Reply to P-3634, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT capable of building schools, hospitals, office buildings, commercial buildings and factory buildings. Can also use man experienced on Highway Structures. Permanent connection with large, well established contracting firm located in Mid-West. P-3618, Engineering News-Record.

HIGHWAY and BRIDGE DESIGNERS

Experience required in highway or structural design. Excellent opportunity for Engineers qualified to design modern expressways and bridges. Location in Harrisburg, Penna. with excellent living conditions. Include experience and salary requirements in first letter.

GANNETT FLEMING CORDDRY & CARPENTER, Inc.
P. O. Box 366 Harrisburg, Pennsylvania

SANITARY ENGINEER

Opportunity available for Sanitary Engineer in an expanding pulp and paper mill located in the Middle Atlantic States. Age 25-35 years. Experienced in paper mill wastes, stream pollution and water purification or similar experience. Good salary and advancement. Send resume of educational background and industrial experience. All replies confidential.

P-3542, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

POSITIONS VACANT

ONE DESIGNER of Water Filtration and Softening Plants and three designers of Activated Sludge Sewage Treatment Plants are needed by 35-year old Midwestern engineering firm where the working conditions are good, with many fringe benefits, and real opportunity for interesting work and advancement. In reply give details of experience with names of employers and years worked, salary and hours worked per week, together with present salary requirements on basis of 40 hour week, and five references. Interviews will be offered qualified applicants. Consoer, Townsend & Associates, 351 East Ohio Street, Chicago 11, Ill.

SELLING OPPORTUNITY OFFERED

SALES ENGINEER — Rochester, New York and Pittsburgh, Pennsylvania territories open with established national concern selling prefabricated metal products to engineering and construction markets. Positions are permanent and offer excellent future with aggressive, progressive and expanding organization. Engineering degree desirable. Previous sales experience unnecessary. Ages 24 to 30. Car furnished. Complete training program. Salary and bonus. RW-2289, Engineering News-Record.

EMPLOYMENT SERVICE

OVERSEAS PROJECTS Guide to most active constructors-engineers, oil co's., gov't & UN groups hiring for foreign projects. Send $1. Cove-McKane Int., GPO Box 1263E, NY 1, NY.

POSITIONS WANTED

ARCHITECT'S SUPERINTENDENT — Available soon. Long experience. Box No. PW-3324, Engineering News-Record.

TUNNEL CONSTRUCTION Supt. 20 years experience at tunnel excavation and concrete lining. Will consider foreign contract. References and back ground on request. Available after August 15, 1954. PW-3449, Engineering News-Record.

CONSTRUCTION ENGINEER experienced in erection industrial, chemical, oil and gas plants desires job. Not too particular about location. PW-3508, Engineering News-Record.

(Continued on the opposite page)

ESTIMATOR WANTED

Commercial and Industrial Construction

Graduate Engineer not over 40 years old. Must be thoroughly experienced in cost analysis and project planning. Unusual opportunity for an unusual young man to associate himself with 35-year old successful Engineering and Construction organization with principal offices in Pittsburgh, Pennsylvania. Compensation commensurate with ability. Splendid opportunity for advancement to top executive position. We are interested only in those meeting the above requiremnts.

P-3575, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

OPPORTUNITY

For an energetic engineer with sales personality

25 to 35 years of age, for sales work with company operating on nationwide basis furnishing Concrete Form Engineering and Rental Service. General construction experience and some Engineering college training essential. Give full details in first letter to

R. P. Wilkinson, Economy Forms Corp.
4301 N. E. 14th St., Des Moines 13, Iowa

MECHANICAL ENGINEER WANTED

Graduate Mechanical Engineer experienced in the operation of Fourdrinier paper machines, refining and related equipment for large progressive mill in Middle Atlantic States. Under 35 years of age. Good salary and excellent opportunity for advancement. Give detailed resume of experience.

P-3545, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

LEARN ESTIMATING

Complete Building Estimators Course, also Building Labor Calculator for practicing estimators. Thirty-fourth year serving the building industry. For free trial and all particulars write:

TAMBLYN SYSTEM
1420 Gilpin St. Denver 6, Colorado

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.

GEO. E. DEATHERAGE & SON CONSTRUCTION CONSULTANTS
411 So. 5th Ave. Lake Worth, Florida

STRUCTURAL ENGINEERING

ARCHITECTURAL ENGINEERING

OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year.

WILSON Engineering Corp
College House Offices HARVARD SQ CAMBRIDGE MASS

POSITIONS WANTED

(Continued from the opposite page)

ESTIMATOR CIVIL engineering graduate, age 34, 10 years field and office experience in commercial, public, and industrial construction. Capable of complete handling of construction estimates, client negotiations, cost systems, purchasing and expediting, field supervision and job management. Desires permanent position with aggressive firm in central Penna., Md., Eastern W. Va., or will consider Northwest U. S. Good references. Available August 15th. PW-3487, Engineering News-Record.

HEAVY CONSTRUCTION manager available. Can staff a job with most key personnel including engineering, accounting, foremen and superintendents. Reply Box PW-3453, Engineering News-Record.

EXPERIENCED CONSTRUCTION Superintendent wants job. Location immaterial. PW-3532, Engineering News-Record.

BRIDGE SUPERINTENDENT or Carpenter foreman, 28 years experience, sober, cost conscious, good organizer, hard pusher. Eastern states preferred. Available now. PW-3517, Engineering News-Record.

CHIEF ACCOUNTANT—Office Manager seven years experience Latin America desires position in Latin America or Far East. Available after one month. No family. PW-3516, Engineering News-Record.

SPECIFICATION WRITER: Recently completed approx. 10 years of specification writing on U. S. Corps of Engineers construction. Now retired. Age 69. Wants few weeks work in order to complete retirement credits under Social Security system. Will not abandon work in progress. Modest salary. Willing to assist in minor office duties. Most effective service would be with Arch.-Engr. doing Government work. Prefer South-East location. PW-3551, Engineering News-Record.

MECH. FIELD supt. heavy experience in design and construction of industrial bldgs; power and CO2 plants, refineries and bauxite, also electrical. Ability to produce, control costs, expedite subs. Presently engaged million sq. ft. project. Will consider responsible position only. Relocate. Graduate M.E. Age 41. Available October. A. Weber, 2801 So. Dort Hiway, Box #8, Flint, Michigan.

BSEE, 5 yrs. experience in open pit mining operations, maintenance, and engineering. Desires position as maintenance engineer or supervisor. PW-3654, Engineering News-Record.

MANAGER EXECUTIVE 15 years experience in engineering and construction. Broad knowledge of foreign and domestic work. Graduate engineer. PW-3656, Engineering News-Record.

CIVIL ENGINEER graduate. Age 33, 8 years experience, 2½ years in field, 5½ years in office. Experienced in field supervision, design, drafting, estimating, costs, quantity take-off; also experienced in reinforced and prestressed concrete. Prefer N. Y. area. Available Sept. 1st. PW-3657, Engineering News-Record.

CONSTRUCTION EXECUTIVE, long New York experience buildings and heavy construction, available for new connection as Project Manager on large operation or as Contractor's executive, where scope will permit full use of ability. Inquiries solicited from contractors requiring top man, qualified to handle all phases, bid to completion. New York area preferred. PW-3661, Engineering News-Record.

ENGINEER, 39, M.C.E. Cornell. Sanitary and hydraulic. Research and development, field application, plant operator and chemist, design and construction. PW-3662, Engineering News-Record.

CONSTRUCTION OFFICE man wants temporary or permanent work in Southwest. Twenty years in general construction, road and sewer building. Home office and field office experience. Presently employed. Age 45, good health. Write PW-3596, Engineering News-Record.

PROJECT MANAGER — General Superintendent. 20 years field experience. All phases heavy construction—domestic and foreign. Able to set up, organize and run field end of entire job. Age 45. College trained. Available at once. PW-3595, Engineering News-Record.

HIGHWAY ENGINEER: Desires county or municipal position. Several years civil engineering experience in both field and office positions. PW-3611, Engineering News-Record.

CIVIL ENGINEER—Master Degree, 32 years of age desires a position in planning new facilities, or expansion or rehabilitation of existing facilities or in administration. Nine years varied experience including planning and coordination of 200 million dollar program. PW-3643, Engineering News-Record.

POSITIONS WANTED

CIVIL ENGINEER—42—20 yrs. experience in heavy construction (specialty highways, railroads, bridges, irrigation & drainage & special structures,) on 3 continents. 5 yrs. design, 15 yrs. field work. Thorough organizer, conscientious hard worker. Speak perfectly German, Spanish, French, Italian. Desires position as project engineer or equivalent with progressive construction company. Foreign or west-northwest coast preferred. PW-3432, Engineering News-Record.

ARCHITECTS SUPERINTENDENT desires change. Varied supervisory experience. Good salary. References. PW-3638, Engineering News-Record.

SELLING OPPORTUNITY WANTED

ARCHITECT — ENGINEERS — contractors — suppliers. Are you interested in the $2 billion program in Europe? American Engineers, internationally experienced, familiar with program, countries, and procedures, will represent you on contingent retainer basis. RA-3456, Engineering News-Record.

FOR SALE

Surveyor's Equipment, complete layout including maps and records. Address 444 East 45th St. Jax. Fla.

GLAZER STEEL Corp.

Structural and Plate Steel Fabricators

Open capacity for quick delivery now available. We solicit your inquiries for Steel Fabrication and Warehouse Steel Products. Let us figure your jobs . . . Large or Small.

Contact us at either New Orleans or Knoxville

P. O. Box 867, New Orleans, La. Phone, Express 2761

P. O. Box 1390, Knoxville, Tenn. Phone 4-8601

WANTED

BLAW-KNOX FORMS

Downstream Face Adjustable Form Panels
Upstream Face Form Panels
Bulkhead Form Panels
Adjustable Spillway Panels

W-3198, Engineering News-Record 330 W. 42 St. New York 36, N. Y.

- WANTED -

GOOD USED 50 C VULCAN STEAM HAMMER

PETERSON CONSTRUCTION COMPANY, INC.
P. O. Box 9371 Houston, Texas

WANTED TO BUY

4000' 15 or 16" CONCRETE FORMS

WILLIAMS CONSTRUCTION CO.
Box 145 Baltimore 20, Md.

WANTED TO BUY

UP TO 500 PATENTED USED SHORES. 5'-9'.

W-3650, Engineering News-Record 330 W. 42 St., New York 36, N. Y.

FOR SALE

3—LeTourneaus Model C. Tournpulls with Model P19 Carryall Scrapers Serial GT2846—2850—2857

1—Allis Chalmer H.D. 20 Serial 5287 with Garwood Bldz.

2—Allis Chalmer H.D. 19 Serial 1785 and 537 with Garwood Bldz.

2—Bros G2 Tamping Rollers Serial 2009 and 2012

1—Garwood Scrapers Model 515

WILLIAM J. CRAWFORD
2135 Fillmore Ave. Buffalo, N. Y.

FOR SALE

BUCYRUS 375 DRAGLINE

WARD LEONARD CONTROLS
150' Boom—9-½ Yard Dragline Bucket —Good Condition
FORSYTHE EQUIPMENT CO., INC. 37-11 Vernon Blvd., Long Island City 1, N. Y.

FOR SALE

P & H Model 1055—New 1951—Crane-Dragline —4 yard Page Bucket-Fairleads—120 Ft. Boom—20 ft. Jib-Light Plant

Hennessey-Forrestal Machy. Co.
705 Chestnut St. St. Louis, Missouri

12—DW 20—FOR SALE

Cat. Wagons, Now Working, *Excellent Condition*

L. G. DEFELICE & SON, INC.
Nettleton Avenue North Haven, Conn. STate 7-5748

FOR SALE

1 JOY CLASS 18HR-2 HARD ROCK LOADER

Serial No. 7108, 440 volts, 3 phase, 60 cycle.
LOUISVILLE CEMENT CORP., SPEED, INDIANA

LORAIN SHOVEL 1¼ YARD

Linkbelt Crane 1¼ yard with 60 ft crane boom, very reasonable.

S. F. PANDOLFO
3120 Main St. Hartford, Conn. Chapel 7-8348

FOR RENT

2 NEW 879-A BARBER-GREENE FINISHING MACHINES

For further information write, wire, or telephone:
ALLIED CONSTRUCTION EQUIPMENT COMPANY
4015 Forest Park Ave., St. Louis 8, Missouri
Telephone: FRanklin 1-1818 FRanklin 1-7132

FOR SALE

KA-MO horizontal EARTH BORING MACHINE

With 12½ H. P. air motor, chuck coupling, track and 72" of 24" drill. Like new.

HARRISON'S SERVICE
P. O. Box 2633, Tulsa, Okla. Phone 3-7113

FOR SALE

New and Used material—Immediate delivery from stock Angles, Channels, I and WF Beams, especially for Contractors needs

H BEAMS PILE SECTIONS

50 pcs	10" B P S	42#	48/60'
46 "	10" B P S	57#	48/67'6"
40 "	12" B P S	53#	60'
43 "	14" B P S	73#	60/73'

Phone or Wire your steel requirements

We are also interested in purchasing your surplus material.

We assure you our prices will be the best obtainable.

HY DRACHMAN STEEL CORP.

Warehouse
1423 34th Avenue, Astoria, New York
Astoria 8-4484 8-8023

Sales Office
563 East Tremont Ave., New York City, N. Y.
CYpress 9-5440

DEPENDABLE USED MACHINES

Special: Ransome 4½ yd. and 3 yd. transit mixers, reconditioned. Come see them

Unit ¾ yd. hoe	Int. T6 bulldozer & backhoe	Galion motor grader
Shield ¾ yd. hoe	Bay City 20 ton truck crane	16x16 roll crusher
Lossman loader	Link Belt LS-85 Diesel crane	Eagle coal crusher
Butler Carscoop	Trailer type road broom	4x10 screen
Hanson truck crane	Auburn trencher on Willys Jeep	3 yd. Dumpcrete

For rent,—cranes, draglines, backhoes, buckets, and all other accessories.

10002 Southwest Highway **TRACTOR & EQUIPMENT CO.** Oak Lawn, Ill.

CABLEWAY

1—15 ton capacity, with 1300' span 2½" Lock Coil Cable operated by 250 HP electric driven three drum Lidgerwood Hoist—No head or tail towers included....$10,000.

SEND FOR OUR COMPLETE EQUIPMENT BULLETIN

GUY F. ATKINSON COMPANY
10 West Orange Avenue
South San Francisco, California
Phone: Plaza 6-0300, Ext. 125

PILING

SURPLUS NEW and USED For Sale or Rent

We do a Nation-Wide business in

STEEL SHEET PILING

IMMEDIATE SHIPMENT

1200 pcs. 72-16 ft. Carn. MP-101—West Coast
428 pcs. 60-80 ft. M-116 & M-115—Illinois
380 pcs. 60-30 ft. DP-2 & AP-3—New York
280 pcs. 35-30 ft. Inland 1-27—Mississippi
218 pcs. 30 ft. Carn. M-116—Iowa
180 pcs. 32-28 ft. Inland 1-23—Georgia
113 pcs. 20 ft. Carn. M-116—South Carolina

Other lengths & sections used & new at other locations in United States

We have Nation-wide reputation for effecting QUICKEST SHIPMENTS

All sizes Vulcan & McKiernan Pile Hammers & Extractors for rent—Shop Rebuilt

Regardless of location of job, Wire, Write, or Phone

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., Chestnut 1-4474 St. Louis, Mo.

STEEL SHEET PILING

600—Pcs. M-116 in 40 to 60'—Chicago
130—Pcs. M-115 in 50 to 60'—Chicago
140—Pcs. M-112 in 60' —Chicago
300—Pcs. M-116 in 50 to 60'—Kansas City
100—Pcs. M-115 in 50' —Kansas City
105—Pcs. M-112 in 60' —Kansas City
83—Pcs. M-112 in 25 to 50'—North Dakota
100—Pcs. I-23 in 12 to 16'—Illinois
86—Pcs. M-116 in 29 to 30'—Southern Illinois
49—Pcs. I-22 in 30' —Wisconsin

Available for Prompt Shipment
Other Lots at Various Locations

CONTRACTORS MACHINERY CO.
Phone VAlentine 4740 7637 SOUTHWEST BLVD. KANSAS CITY 8, MO.

FOR SALE

LOCOMOTIVES

Diesel electric
25 - 44 - 45 - 65 - 70 tons

Write for Details

FRANK M. JUDGE & CO., INC.
7010 Empire State Building
New York 1, N. Y.

RAILS-TIES

TRACK ACCESSORIES
NEW and RELAYING

NEW—RAILS—Relayers

All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK

480 Lexington Ave. New York, N. Y.
Reno, Nevada
Park Bldg. Pittsburgh, Pa.
Carnegie, Pa.

RENT STEEL SHEET PILING

Get the exact lengths and sections you need from Foster—all standard makes, delivered *on time*—and at Foster's standard low rental rates. Also Rental Pile Hammers & Extractors.

L.B. FOSTER co.
PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
HOUSTON 2 • LOS ANGELES 5

FOR SALE

STEEL SHEET PILING

AT CHIEF JOSEPH, WASHINGTON
Shipped New—Used Only One Job

CARNEGIE Length	MP-101 Pcs.	MP-102 Pcs.	TEES Pcs.
72-65 ft.	108	100	3
65-60 ft.	210	50	9
60-50 ft.	210	5	18
50-45 ft.	290	2	7
45-40 ft.	120	1	13

Also quantity shorter than 40 ft.—Quick shipment regardless of job location, write, wire or phone.

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., *CHestnut 4474*, St. Louis 1, Mo.

RAILROAD Cross and Switch TIES

Promptly from adequate stocks
NEW and USED *(as available)*

GILLIS & COMPANY
29 East Madison St. Chicago 2

FOR SALE
85 Tons AP3 Sheet Piling (various lengths)
55 Tons DP2 Sheet Piling (various lengths)
115 Tons DP1 Sheet Piling (16' lengths)
Nearly New

A. S. WIKSTROM, INC.
Skaneateles, N. Y.
Phone 661

Locate *Piling*
or Buyers for *Piling*
in the Searchlight Section of
ENGINEERING NEWS-RECORD

RAILS - TIE PLATES

Frogs & Switches—Track Accessories

W. H. DYER CO., INC.
2111-X Railway Exchange Bldg., St. Louis 1, Mo.

PILE DRIVING EQUIPMENT

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Drop Hammers - Driving Caps
Steel Leads - Pile Driver Hose
Hoists and Boilers

CONTRACTORS MACHINERY CO.
Phone VAlentine 4740 — 2637 SOUTHWEST BLVD KANSAS CITY 8, MO

CONCRETE PLANT EQUIPMENT

1—Johnson 150 cubic yard Concrete Plant. 3 aggregate and 1 cement compartment, 2 cubic yard aggregate and cement weight batchers, 520 barrel auxiliary cement bin with truck hopper, elevator and screw conveyor. Outfit has aggregate truck hopper and bucket elevator. Plant includes 2 each of Ransome 28S Mixers.

Subject to prior sale

FRAZIER-DAVIS CONSTRUCTION COMPANY
1319 Macklind Avenue, St. Louis, Mo. — STerling 1-1950
Box 188—Grahamsville, New York — Grahamsville 2861

SEA MULES FOR SALE

All steel twin screw tug boats. 38'x13'x6'. Powered by two 142 HP Chrysler engines. 9 to 1 reduction gear.

New, still in the original crates. $6500 each.

MISSISSIPPI VALLEY EQUIPMENT CO.
511 Locust St. — St. Louis 1, Mo.

LOW COST INSTALLATION AND OPERATION

CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM or DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT or BUY

FOR DAMS, BRIDGES, BREAKWATERS, FILTRATION AND SEWERAGE PLANTS

FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY, LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

FOR RENT OR SALE
OR RENTAL, PURCHASE

Koehring (605), 1½ Cu. Yd.
36-Ton, clamshell, dragline, hoe. D-13000 A. Cat. diesel, 75 ft. boom, power, lowering-suspension-stop. Retractable A frame, long and wide mountings. Excellent condition, new 1952.
$40,000

Insley, W.B., 1 Yd.
20-Ton crane, clam, dragline, complete 50 ft. boom, Cummins Diesel Model HIp 600, A frame, power boomstop, long-wide mountings, new '53.
$22,000

Compressors, 210-185-125
On rubber; gas, exc. condition.

Wanted, Wrecking Ball
3,000 lbs.

COLUMBIA CONSTRUCTION CO., INC.
2108 Columbia Ave. — WAbash 1567
Indianapolis, Ind.

5—LaPlante-Choate Motor Scrapers, Model T.S. 300. Priced at $14,000.00 each.
1—Tournadozer equipped with G.M. Diesel and Torque converter, $12,000.00.
1—L. B. Littleford steam generator 3,000 gallon capacity, and trailer, $5,000.00.
All of the above machines are in excellent condition and are about three years old.

VILBRO EQUIPMENT COMPANY
233 North Ave. — Westfield, N. J.

Stiff Leg Derricks 10 to 100 Ton
Guy Derricks, 20 & 60 ton American Terry
Hoists Elec. Gas. Steam
Steam Hoist 10 x 12 Cyl. 3 drum
3½ Yd Page Diesel Elec Walker Dragline
40 ton Locomotive, Gas Elec
50 Ton Locomotive, Steam
Locomotive Cranes—Gantry Cranes.
Bucyrus Erie, Model 42-B Steam Crane, Pile Driver

STONE THE CRANE MAN
1132 Prudential Bldg. — Buffalo 2, N. Y.

BLOWER: Roots-Connersville, 500 H.P., 39500 CFM, 63" of water. NEW, UNUSED.
COMPRESSORS: Ingersoll Rand and Chicago Pneumatic, 1500, 1700, 2200 CFM with synchronous motors.
DRAGLINE EQUIPMENT: For 120-B Bucyrus Erie Electric Shovel, with or without 4 yd. dragline bucket. All NEW—UNUSED.
OVERHEAD ELECTRIC CRANE: 8 ton, 54' span, 4 motor, clam shell bucket operating, 440 volt, 3 phase, 60 cycle.
STEEL ERECTOR'S CRANE: P & H 855, 80' boom and jib, diesel powered, boom power up and down. NEW condition.
LOCOMOTIVES: 2—65 ton diesel electric, standard gauge, thoroughly modern, excellent condition. For sale or rent.
LOCOMOTIVE CRANE: Link Belt 25 ton capacity, standard gauge, gasoline powered, rail steel trucks, air brakes, with or without 1½ yd. Williams clam shell bucket, thoroughly modern, excellent condition. Located Minnesota. For sale or rent.
MINE HOISTS: Single and double drum 100 to 1500 H.P. with all electrical equipment. Complete specifications, drawings and photos available.
MINE HOIST SPECIAL: Nordberg 1200 H.P., 1400 FPM, one drum clutched, wraps 1100 ft. 1¾" rope, complete with motor and all auxiliary equipment, with or without 95 ft. head frame.
MINE HOIST MOTORS: 300, 400, 600 and 1200 H.P. with control equipment.
BALL MILL: Marcy 6'x12' with herringbone gears, with 200 H.P., 440 volt, A.C. slip ring motor and control.
DRYERS: 4'x20', 5'x30' and 10'x75'.
AIR SEPARATOR: Sturtevant 16 ft. with or without 75 H.P. motor.
TRANSITE PIPE: 7000 ft. 10" and 14", Class 100, 150 and 200. NEW.
JAW CRUSHERS: Various makes, sizes 4"x6" to 48"x60".
JAW CRUSHER SPECIAL: Allis Chalmers 40"x42" manganese fitted with 220/440 volt, slip ring motor with drive and controls, with or without all steel crusher house with overhead hand operated crane, 30 tons capacity.
WE BUY AND SELL EQUIPMENT THROUGHOUT NORTH AND CENTRAL AMERICA.

A. J. O'NEILL
LANSDOWNE, PA.
Phila. Phones: MAdison 3-8300 - 3-8301

FOR SALE or RENT
With Option to Purchase
Rebuilt—A1 Condition
48B Bucyrus Erie Shovel 2 cy diesel
Model 25 N. W. Shovel ¾ cy diesel
Caterpillar D8 Bulldozer
Shovel Front for Model 25 N.W.
6 wheel Mack Tractor 40 ton Rogers Low Boy

WILLIAMS CONSTRUCTION COMPANY
Box 145 Balto. 20, Md. — Murdock 6-6600

UNIVERSAL FORM PANELS
FOR SALE

New Style, Good Condition

WALSH-PERINI-GROVES-SLATTERY COS.
122 East 42 Street — New York 17, N. Y.
Phone: Oxford 7-1540

NEED AIR?
CALL
AMERICAN AIR of JERSEY
AIR FOR SALE or RENT SINCE 1902
GAS • DIESEL • STEAM • ELECTRIC
NEW AND QUALITY REBUILTS

PORTABLE

55 CFM	Lindsay (GAS)
60 CFM	LeRoi—CPT—Worth (GAS)
105 CFM	Joy—Worth—CPT (GAS)
160 CFM	Worthington (GAS)
210 CFM	Worthington (GAS & DIESEL)
270 CFM	Sullivan w/Buda Power Unit—Skids
315 CFM	Worthington (GAS & DIESEL)
500 CFM	Worthington (DIESEL)
600 CFM	Worthington (DIESEL)

STATIONARY

80 CFM	6 x 5 Worthington HB—10 HP Elec
122 CFM	7 x 7 Worthington HB—20 HP Elec
170 CFM	Davey Semi-Portable 25 HP Elec
195 CFM	8-8 x 9 American Steam
211 CFM	9 x 9 Ingersoll—ES-1—40 HP Elec
284 CFM	Worth Semi-Portable 50 HP Elec
364 CFM	20 PSI 12 x 7 Gardner Denver
388 CFM	Worth Semi-Portable 75 HP Elec
622 CFM	14½ x 13 American 100 HP Elec
1085 CFM	35 PSI 20 x 12 Pennsylvania
1452 CFM	70 PSI 15/15 x 14 Penn Duplex

MANY OTHERS TO CHOOSE FROM
AFTERCOOLERS—AIR RECEIVERS

VACUUM PUMPS

354 CFM	14 x 5 Penn—15 HP
434 CFM	14 x 7 Ingersoll 15-20 HP
720 CFM	18 x 7 Worthington 25-30 HP
1184 CFM	22 x 9 Chicago 40-50 HP
1633 CFM	24 x 11 Chicago 60 HP

American
AIR COMPRESSOR CORP
DELL AVE & 48th ST. NORTH BERGEN, N. J.
Telephone UNion 5-4848

CRANES FOR RENT

CRAWLERS — Capacities to 60 tons, Booms to 180 ft.
TRUCK CRANES — Capacities to 35 tons, Booms to 130 ft.

P and H, Lima and Manitowoc.
Top-Condition erection cranes

ROGER SHERMAN TRANSFER COMPANY
East Hartford, Connecticut
JAckson 8-4106

MISCELLANEOUS EQUIPMENT

1—Lima 2400 Shovel, Torque converter, Cat V-12, D-397 Engine
1—Lima 1201 Loading Shovel, powered with Cummins "L" Engine
1—Lima 802 Shovel, Torque Converter, Cummins NHRS Engine
1—Lima 1201 Comb. Shovel & Drag 90' Boom, Cummins "L" Engine
1—Lima 34 Paymaster Comb. Shovel, Pull Shovel, Clam & Drag, Buda L-525
1—Lima 34 Paymaster Comb. Pull Shovel & Drag, GMC 3-71
6—Euclids 59TD—22 Ton Convertors, GM 6-110, Heated end dump boxes
10—Euclids 8TD—22 Ton, Cummins NHRS, heated end dump boxes
4—Euclids 1TD—22 Ton, Cummins NHRS, end dump boxes
2—Bucyrus-Erie 29T, Blast hole drill 6", Caterpillar D-311
2—LeTourneau Super C Tournadozer, w/angledozer & Rootrake
9—LeTourneau Model C Tournapulls w/GM 6-71 Engines
1—Caterpillar D-8 Tractor w/LeTourneau Bull Dozer
1—LeTourneau Model "W" Scraper, w/4-24:00 x 32 Tires
1—LeTourneau Model "FU" Scraper, 2-21:00 x 25, 2-24:00 x 29 Tires
1—Gorman-Rupp—4" High Lift Pump, 40,000 GPH
1—LeTourneau Model E-16 Tournarocker w/brakes, less wheels & tires
1—Galion Model 118 Motor Grader, w/GM 4-71 and 13' Moldboard

Subject to prior sale.

PHILLIPPI EQUIPMENT COMPANY
6104 Excelsior Blvd. Minneapolis 16, Minnesota MO 9-7813

CARE TO TRY A LITTLE BARTER?

We have to offer:

1—LeTourneau Model D Roadster 8-10 yard self-propelled scraper with Cummins Diesel engine and excellent rubber $7500.00
1—Caterpillar D-4 Crawler with Bros Hydraulic Angledozer. Very good all around condition $4800.00
1—International TD-9 Crawler with Bucyrus-Erie Angledozer. Ready to work $4200.00
1—Northwest half-yard Crawler Crane-Dragline with gas power $3900.00

We would rather have:
Cash and/or late model Allis-Chalmers Crawler Tractors or Scrapers.

FRANTZ EQUIPMENT COMPANY
50th & Wynnefield Avenue Philadelphia 31, Pennsylvania
GReenwood 7-7200

Advertisement of Sale of Excess

TUNNEL SUPPORT STEEL

The West Virginia Turnpike Commission proposes to sell at the storage site, excess Tunnel Support Steel that was purchased for construction of the Tunnel on the West Virginia Turnpike.

The following items are offered for sale:

	Approximate Quantity
Roof Bolts and Accessories—Unused	12 Tons
Lagging for Roof Bolts—Unused	13 Tons
Tunnel Lagging—Unused	4 Tons
Tunnel Lagging—Used	43 Tons
Tie Roads—Unused	5 Tons
Lagging Clamp—500 each Unused	
2,000 each Used	4 Tons
Tunnel Ribs—Unused	3 Tons
Bolts & Nuts—Used	1 Ton
Scrap Steel	6 Tons

Proposals will be received by the West Virginia Turnpike Commission until 2:00 P.M. Eastern Standard Time, August 26, 1954, at the office of Howard, Needles, Tammen and Bergendoff, 804 Greenbrier Street, Post Office Box 5266—Capitol Station, Charleston, West Virginia.

All steel is stacked accessible to truck loading on a level construction road in good condition about six hundred (600) feet from State Route No. 83 near the Village of Standard, West Virginia. Prospective buyers may see and inspect the steel at the site.

Proposal forms and detailed description including size, condition and quantity of each item will be furnished upon request to Howard, Needles, Tammen and Bergendoff, 804 Greenbrier Street, Charleston, West Virginia. Mailing address: Post Office Box 5266, Capitol Station, Charleston, West Virginia.

Proposals must be made on the proposal forms furnished by the Commission in the manner designated on the forms and must be received at the place designated above on or before the day and hour named.

West Virginia Turnpike Commission
August, 1954 William G. Sethers, Vice-Chairman

PIPE

SURPLUS NEW and USED FOR SALE

Pipe Sizes ⅛" to 72" OD

PIPE, VALVES & FITTINGS

pipe piling • culverts • valves
specialists in prefabricating pipe

ALBERT PIPE SUPPLY CO., INC.

CUTTING-THREADING-FLANGING-WELDING
BEVELING-BENDING-COILING-LINING
TO ALL STANDARD SPECIFICATIONS

"one call gets them all"

fittings • FLANGES • WELDING • IRON-STEEL

***SPEEDLAY* pipe systems**
Berry at North 13 Sts., B'klyn, N. Y.

CRANES FOR SALE

One—P and H 955A 60 tons 140 ft. main boom
One—P and H 255A Truck Crane 80 ft. boom, 30 ft. jib
Two—P and H 150 Truck Cranes 50 ft. boom, 20 ft. jib

All modern and top condition. Used on Hook Work only. All with fine-control erection extras.

ROGER SHERMAN TRANSFER COMPANY
EAST HARTFORD, CONN.
JAckson 8-4105

FOR SALE—IMMEDIATE DELIVERY

C.I. Water Pipe and Fittings-AWWA-Std.

We specialize in Hard to Get—C.I. Pipe and Fittings—such as the following
5L—60" B&S Pipe 12' L. Class B.
2,000 Ft.—30" Pipe—Class B. 12' L.
Pitcast—Reconditioned.
3—30", 24—18", 12—20", 12—24".
Solid Sleeves, all 24" Long Class D.
1—24" True "Y" Branch
Flanged F & D. 125 lbs. also "Y" Branches 3" to 30" B&S Type 2
B&S 45 deg. Bends, 20" to 36" Dia.
1,200—8"—45 deg Bends, 300—8"—90 deg. Bends B&S, Class D.
Also C.I. B&S Pipe 3" to 36"—C.I. Flange Pipe 3" to 24" Dia. Complete line of C.I. Fittings always in stock, B&S and Flanged

TAGCO, INC.
111 Front St., Hempstead, L. I., New York
Telephone—Hempstead 2-5555—6857

PIPE

15,000 feet 6" steel pipe
10,000 feet 4" steel pipe
Both equipped with roller grip couplings suitable for air or water.

Subject to prior sale

FRAZIER-DAVIS CONSTRUCTION CO.
1319 Macklind Avenue, St. Louis, Mo.
STerling 1950

Box 188 Grahamsville, New York
Grahamsville 2861

NEW WIRE ROPE BLOCKS

$10.00 each
While they last

ALL BRONZE BUSHED

14" double-regular diamond pattern
12" drop link snatch with hooks
14" drop link snatch with hooks
16" safety snatch with shackle

ABERTHAW COMPANY
133 Southampton St., Boston 18, Mass.
Tel. Highlands 5-6700

EST. 1904

DAVIDSON
PIPE COMPANY INC.

One Of The Largest Stocks In The East
Seamless and Welded ½" to 36" O.D. All wall thickness Manufactured. Specialty large sizes. Cutting — Threading — Flanging — Fittings — Valves.

Call GEdney 9-6300
50th St. & 2nd Ave., B'klyn 32, N. Y.

GLOBE PIPE & FITTING CO.

VALVES FITTINGS NEW PIPE USED FOR ALL PURPOSES

785 Metropolitan Ave., Brooklyn 11, N. Y.
EVergreen 7-6220

PUMPCRETES

Rebuilt Current Models
For Sale or Rent

CONCRETE EQUIPMENT COMPANY
Jones Island, Station D
Milwaukee 7, Wis.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names

Additional cards on following pages

NEW ENGLAND

Engineering Services Inc.

Foundation Investigations,
Soil Testing & Test Borings
Minerals Exploratory
Service

119 New London Tnpk. Glastonbury, Conn.

Fay, Spofford & Thorndike

Engineers

John Ayer — Ralph W. Horne
Bion A. Bowman — William L. Hyland
Carroll A. Farwell — Frank L. Lincoln
Howard J. Williams
Members, American Society of Civil Engineers

Airports, Bridges, Turnpikes
Water Supply, Sewerage and Drainage
Port and Terminal Works
Industrial Buildings

Designs — Investigations
Supervision of Construction
Boston — New York

Jackson & Moreland

Engineers and Consultants

Design and Supervision of Construction
Reports—Examinations—Appraisals
Machine Design—Technical Publications
Boston — New York

Chas. T. Main, Inc.

Engineers

Design and Supervision of Construction for Industrial Plants
Electrical, Steam and Hydraulic Engineering
Investigations, Reports and Appraisals
Chamber of Commerce Bldg.
80 Federal St., Boston, Mass.

Metcalf & Eddy

ENGINEERS

Investigations — Reports — Design
Supervision of Construction and Operation
Management — Valuation — Laboratory
1300 Statler Building, Boston 16

C. W. Riva Co.

Engineers

Edgar P. Snow — Robert C. Barker
John F. Westman — John H. Grass

Highways, Bridges, Tunnels, Airports, Foundations, Sewerage, Water Supply.
511 Westminster St., Providence 3, R.I.

MIDDLE ATLANTIC

Airways Engineering Corp.

Airports, highways, dams, fuel storage, pipe lines, photogrammetry.
1212 - 18th St., N.W.,
Washington 6, D. C.
Phone: REpublic 7-8131.

Oscar Sutermeister

Consultant on Defense Planning

Reduction of Vulnerability to Atomic and Hydrogen Bomb Attack—Industrial and Urban Dispersion—Protective Construction—Underground Relocation
5923 Johnson Ave. Bethesda 14, Md.

Whitman, Requardt & Associates

Engineers—Consultants

Civil—Sanitary—Structural
Mechanical—Electrical
Reports, Plans, Supervision, Appraisals
1304 St. Paul St., Baltimore 2, Md.

Greer & McClelland

Consulting Foundation Engineers

SOIL INVESTIGATIONS

Borings
Laboratory Tests
Foundation Designs & Analyses
Reports

98 Greenwood Ave. — Montclair, N. J.
2649 N. Main St. — Houston, Texas

Edwards, Kelcey & Beck

Reports, Design Supervision, Expressways, Port & Harbor Works, Terminals, Tunnels, Bridges, Water Supply, Industrial Plants, Traffic and Management Studies.

3 William Street — Newark 2, N. J.
New York — Boston — Philadelphia

Porter, Urquhart & Beavin

O. J. Porter & Co.
Consulting Engineers
Airports-Highways-Dams-Structures
Foundations-Stabilization-Pavements
415 Frelinghuysen Ave., Newark 5, N.J.
76 Ninth Ave., New York 11, N. Y.
3548 West Third St., Los Angeles 5, Calif.
516 Ninth St., Sacramento 14, Calif.

Boswell Engineering Company

Engineers — Surveyors

Topographic, Highway and Property Surveys, Tax Maps, Design, Supervision, Highways, Industrial Buildings, Sewers, Garbage Disposal
Municipal Improvements, Airports
Ridgefield Park, New Jersey
Phone Diamond 3-4343

Engineering Corporation Of America

Chemical & Petro-Chem Process Plants
Industrial Waste Treatment Projects
Air Pollution Abatement
Special Mechanical & Process Equipment

207 Grove Street — Westfield, N. J.
Westfield 2-7117

Frank E. Harley and Associates

Consulting Engineers

Design, Surveys, Plans and Construction Highways, Sewerage and Sewage Treatment, Water Supply and Purification, Municipal Problems.
Harley Bldg., 200 Godwin, Wyckoff, N. J.

B. K. Hough

Consulting Engineer
Soils & Foundation Engineering

Site investigations, soil testing, design analysis for earthworks, foundations and pavements, field inspection, engineering reports, consultation.
121 E. Seneca St., Ithaca, New York

Ammann & Whitney

Consulting Engineers

Design — Construction Supervision
Bridges, Highways, Expressways, Buildings, Special Structures, Airport Facilities
76 Ninth Avenue, New York 11, N. Y.
724 E Mason Street, Milwaukee 2, Wis.

Barker & Wheeler

Water Supply — Utility and Industrial
Sewerage — Valuations
Sewage Disposal — Reports
Power Systems

New York City, 11 Park Place
Albany, N. Y. 16 State St.

Clinton L. Bogert Assoc.

Consulting Engineers
Clinton L. Bogert — Ivan L. Bogert
Robert A. Lincoln — Donald M. Ditmars
Water and Sewage Works
Refuse Disposal — Industrial Wastes
Drainage — Flood Control
634 Madison Ave., New York 22, N. Y.

Bowe, Albertson & Associates

Engineers

Water and Sewage Works—Industrial Wastes—Refuse Disposal—Municipal Projects—Airfields—Industrial Buildings —Reports—Designs—Estimates —Valuations—Laboratory Service.
110 William St., New York 7, N. Y.

Buck, Seifert & Jost

Consulting Engineers
(Formerly Nicholas S. Hill Associates)

Water Supply — Sewage — Hydraulic Developments, Reports and Valuations. Chemical and Biological Laboratories.
New York City, 112 E. 19th St.

When you need a SPECIALIST in a hurry . . .

Engineering News-Record's Professional Service Section offers the quickest, most direct method of contacting consultants who may be available NOW.

Brown & Blauvelt

CONSULTING ENGINEERS

Expressways, Highways, Parkways
Airports, Bridges, Dams, Water Supply

Industrial and Chemical Plants
Sewage Disposal

Preliminary Reports, Engineering Design, Construction Supervision

443 Fourth Ave., New York 16, N. Y.

Cotton, Pierce, Streander, Inc.

Associated Engineering Consultants

Water Supply, Treatment, Distribution
Sewage, Sewage Treatment
Refuse Disposal, Trade Wastes
Power Plants
Reports, Plans, Supervision

122 Nassau St., New York, N. Y.
PO Box 198, Hyde Park 36, Mass.
1405 W. Erie Ave., Phila. 40, Pa.
55 Caroline Rd., Gowanda, N. Y.

Ebasco Services Inc.

ENGINEERS
CONSTRUCTORS
BUSINESS CONSULTANTS

Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering

Two Rector Street — New York
208 S. LaSalle Street — Chic. 4, Ill.
1625 I Street, N.W. — Wash. 6, D. C.

Hardesty & Hanover

Consulting Engineers

Successors to Waddell & Hardesty

Bridges
Long Spans of All Types
Movable—Lift, Bascule and Swing
Hanover Skew Bascule
Steel and Concrete Spans
Grade Crossing Eliminations

Other Structures
Foundations
Supervision, Reports, Appraisals

101 Park Avenue, New York 17, N. Y.

Frederic R. Harris, Inc.

CONSULTING ENGINEERS

F. H. Dechant, E. J. Quirin, E. H. Harlow

Harbors, Piers & Bulkheads, Drydocks.
Foundations, Soil Mechanics.
Sanitary & Industrial Waste Disposal.
Water Supply, Flood Control.
Airports, Highways, Bridges.
Power, Industrial Plants, Buildings.

27 William Street — New York
1 William Street — Newark
Fidelity Phila. Trust Bldg. — Philadelphia

Hazen & Sawyer

Engineers

Richard Hazen — Alfred W. Sawyer
Water and Sewage Works,
Industrial Waste Disposal,
Drainage
Reports, Design, Supervision of Construction and Operation
110 East 42nd St., New York 17, N. Y.

Knappen-Tippetts-Abbett-McCarthy

Engineers

Ports, Harbors, Flood Control, Power, Dams, Bridges, Tunnels, Highways, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.

62 West 47th Street, New York City

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges and Structures
New York, N. Y., 55 Liberty St.
Kansas City, Mo., 1805 Grand Ave.

Moran, Proctor Mueser & Rutledge

Consulting Engineers

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.

New York 17, N. Y. 420 Lexington Ave.

PARDO, PROCTOR, FREEMAN & MUESER
Ap. Correo 614 — Caracas, Venezuela

Parsons, Brinckerhoff Hall & Macdonald

ENGINEERS

Airports, Bridges, Tunnels, Highways, Traffic and Transportation Reports, Subways, Foundations, Harbor Works, Valuations, Power Developments, Industrial Buildings, Dams, Sewerage, Water Supply.

51 Broadway, New York 6, N .Y.

E. Lionel Pavlo

Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports

7 E. 47th St. — New York 17, N. Y.

Malcolm Pirnie Engineers

Civil & Sanitary Engineers

Malcolm Pirnie — Ernest W. Whitlock
Robert D. Mitchell — Carl A. Aranander
Malcolm Pirnie, Jr.

Investigations, Reports, Plans
Supervision of Construction and Operations.

Appraisals and Rates
25 W. 43rd St., New York 36, N. Y.

The Pitometer Associates

Engineers

Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Water Measurements & Special Hydraulic Investigations

New York, 50 Church St.

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Waste, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Clyde Potts Assoc.

Weston Garrett-Stanley N. Williams
Consulting Sanitary Engineers
Sewerage and Sewage Disposal
Water Works and Water Supply
Valuations and Appraisals
30 Church Street, New York 7

Preload Engineers Inc.

Founded - 1934

Consultants in Prestressed Design

Designers of more than 800 prestressed concrete bridges, buildings, tanks and high pressure pipe lines erected in North America since 1934.

Carson Dobell — *R. H. Thomlie*
Brie Meike — *Cedric Steiner*

955 North Monroe Street, Arlington, Va.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — Additional cards on preceding and following pages

Sanderson & Porter

Engineers and Constructors

New York • Chicago • San Francisco

Scheidenhelm, F. W.

Consulting Engineer

Hydraulic Engineering; Hydro-electric Development; Water Supply; Flood Control; Engineering Problems relating to Water Rights and Water Power Law; Appraisals. 50 Church Street, New York 7, N. Y.

Seelye Stevenson Value & Knecht *Consulting Engineers*

Richard E. Dougherty, Consultant

Airports, Highways, Bridges, Dams, Water Supply, Sanitation, Tunnels, Piers, Industrial Plants, Reinforced Concrete, Steel, Industrial Waste Disposal, Foundations, Soil Studies.
Civil — Mechanical — Electrical

101 Park Avenue New York 17, N. Y.

Severud-Elstad-Krueger

Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures

415 Lexington Avenue
New York 17, N. Y.

Singstad & Baillie

Consulting Engineers

Ole Singstad David G. Baillie, Jr.

Tunnels, Subways, Highways
Foundations, Parking Garages

24 State St. New York 4, N. Y.

Frederick Snare Corporation

Engineers—Contractors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals.
Difficult and Unusual Foundations A Specialty.

233 Broadway, New York City 7

Havana, Cuba Lima, Peru
Bogota, Colombia, Caracas, Venezuela, San Juan, Puerto Rico, Guayaquil, Ecuador.

D. B. Steinman

Consulting Engineer

BRIDGES

Design, Construction
Strengthening, Investigations, Reports, Advisory Service

117 Liberty St., New York 6, N. Y.

Henry W. Taylor

Consulting Engineer

Water Supply, Sewerage
Refuse Disposal, Incineration
Industrial Developments

151 W. Merrick Rd. Freeport, N.Y.

The J. G. White Engineering Corporation

Design - Construction
Reports—Appraisals

80 Broad Street, New York

Keis & Holroyd

Consulting Engineers

Formerly Solomon & Keis
since 1946
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial buildings.

Troy, N. Y. Ft. Lauderdale, Fla.

Capitol Engineering Corporation

Engineers—Constructors—Management

Bridges Dams
Planning Airports
Sewage Systems Water Works
Design and Surveys Roads & Streets
Executive Offices Dillsburg, Penna.

Gannett Fleming Corddry & Carpenter, Inc.

ENGINEERS

Dams, Water Works, Sewage, Industrial Wastes & Garbage Disposal, Highways, Bridges & Airports, Traffic & Parking—Appraisals, Investigations & Reports.

Harrisburg, Penna.

Branch Offices
Pittsburgh, Pa. Philadelphia, Pa.
Daytona Beach, Fla., Pleasantville, N. J.

Modjeski and Masters

Consulting Engineers

Design, Supervision, Reports, Inspection and Investigations, of Bridges, Structures, and Foundations.

State Street Bldg. 33rd and Arch Sts.
Harrisburg, Pa. Philadelphia 4, Pa.

Aero Service Corporation

Photogrammetric Engineers

Aerial Topographic Maps
Precise Photo Mosaics
Plastic Relief Models

236 E. Courtland St.
Philadelphia 20, Pa.

Albright & Friel, Inc.

Consulting Engineers

Water, Sewage and Industrial Wastes Problems, Airfields, Refuse Incinerators, Dams, Power Plants, Flood Control, Industrial Buildings, City Planning, Reports, Appraisals and Rates, Laboratory.
121 So. Broad St., Philadelphia 7, Pa.

Day & Zimmermann, Inc.

Engineers

Designs, Construction, Valuations
Reports and Management
Public Utilities and Industrials

New York Philadelphia Chicago

Frederick H. Dechant

Consulting Engineer

Chairman of the Board
Frederic R. Harris Inc.
Water Works, Industrial Wastes, Sewerage, Recovery Processes, Hydraulic Works, Gas Plants.
Philadelphia: Fidelity Phila. Trust Bldg. New York: 27 William St.

Fridy - Gauker - Truscott & Fridy

Architects & Engineers

Water Sewerage - Industrial Waste Incineration - Power & Distribution
Airport - Building - Town Planning
1321 Arch Street - Philadelphia 7, Pa.

Hunting, Larsen & Dunnells, *Engineers*

Industrial Plants—Warehouses, Office and Commercial Buildings, Steel and Reinforced Concrete. Design and Supervision. Reports.

1159 Century Bldg., Pittsburgh, Pa.

Morris Knowles Inc.

Engineers

Water Supply and Purification Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.

Pittsburgh, Pa.

Peter F. Loftus Corporation

Engineering and Architectural Consultants and Designers

First National Bank Bldg.
Pittsburgh 22, Pennsylvania

Cable Address—
"LOFTUS Pittsburgh"

Gilbert Associates, Inc.

Engineers • Consultants • Constructors

607 Washington St., Reading, Pa.

Engineering • Construction Supervision
Sanitary • Power • Water • Sewerage
Industrial Relations • Rate-Research

New York • Philadelphia • Washington

Michael Baker, Jr., Inc.

Consulting Engineers

Civil Engineers, Planners, Surveyors; Airports, Highways, Water & Sewerage Design; Aerial Topographic Maps; Dams; Irrigation; Reports; All types surveys. Home Office: Rochester, Pa.; Branch Offices: Jackson, Miss., Harrisburg, Pa.

Weigle Engineering Co.

CIVIL ENGINEERS

William E. Weigle Donald K. Weigle
Sewers, Bridges, Municipal Work
Design and Construction Supervision
Estimates and Flood Control

38 N. Duke St., York, Pa.

SOUTH

Polk, Powell and Hendon

Consulting and Designing Engineers

Municipal and Industrial Works,
Investigations and Reports
621 Stallings Building,
Birmingham 3, Alabama

Palmer and Baker, Inc.

Consulting Engineers - Architects

Naval Architects - Marine Engineers
Surveys-Reports-Design-Supervision
Consultation

Transportation and Traffic Problems
Tunnels-Bridges-Highways-Airports
Industrial Buildings
Waterfront and Harbor Structures
Graving and Floating Dry Docks
Vessels, Boats and Floating Equipment
Complete Soils, Materials and Chemical Laboratories

Mobile, Ala. New Orleans, La.
Harvey, La.

Duval Engineering & Contracting Co.

General Contractors

FOUNDATION BORINGS
For Engineers and Architects

Jacksonville, Florida

Rader Engineering Co.

Water Works, Sewers, Refuse Disposal, Ports, Harbors, Flood Control, Bridges, Tunnels, Highways, Airports, Traffic, Foundations, Buildings, Reports, Investigations, Consultations.

111 N.E. 2nd Ave., Miami 32, Florida

Law-Barrow-Agee Laboratories, Inc.

Soils Engineers & Consultants

Soil Testing—Soil Boring—Rock Drilling—Load Testing—Field Control—Engineering Studies—Chemical Analysis—Physical Testing
Box 1558 Atlanta 1, Ga.
Serving the entire South

Patchen & Zimmermann

Engineers

Construction Plant, Cofferdams, Structures, Industrial Plants, Dams, Sewerage and Sewage Treatment, Water Supply and Treatment. Supervision, Surveys, Reports.

Augusta, Ga. Anniston, Ala.

Eustis Engineering Company

FOUNDATION AND SOIL
MECHANICS INVESTIGATIONS

Soil Borings *Laboratory Tests*
Foundation Analyses *Reports*

3535 Airline Highway
New Orleans 26, La.

Paulson Engineering Services, Inc.

Consulting Engineers

Marine Engineering, Design Dredging Job Estimates, Land Reclamation Development.
P. O. Box 341 Charleston, S. C.

Schmidt Engineering Co.

Consulting Engineers

Investigations, Reports, Designs, Supervision Heavy Construction—Dams and Hydroelectric Projects—Foundation Explorations and Treatment—Water and Sewerage Works — Bridges & Highways
817 Broad St. Chattanooga 2, Tenn.

Hayes, Seay, Mattern & Mattern

Engineers

Civil—Electrical—Mechanical—Structural—Municipal
Design—Reports—Supv. Const.
Roanoke Virginia Norfolk

MIDDLE WEST

Alvord, Burdick & Howson

CONSULTING ENGINEERS

Water Works — Sewerage
Water Purification — Sewage Treatment
Flood Relief — Power Generation
Drainage — Appraisals

20 North Wacker Drive, Chicago

A. J. Boynton & Co.

ENGINEERS

Fixed and Movable Bridges
Structures
Foundations

Design
Construction

100 N. Wabash Ave., Chicago 2.

Consoer, Townsend & Associates

Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
351 East Ohio St., Chicago 11, Illinois

Ralph H. Burke, Inc.

CONSULTING ENGINEERS

Complete Architectural and Engineering Services
Plans, Supervision, and Reports

Expressways - Grade Separations
Traffic Studies - Parking Structures
Underground Garages- Shore Protection
Parks-Field Houses-Municipal Works
Airports and Air Terminal Buildings

20 North Wacker Drive, Chicago 6, Ill.

De Leuw, Cather & Company

CONSULTING ENGINEERS

Transportation, Public Transit and Traffic Problems

Industrial Plants — Grade Separations
Railroads — Expressways
Subways — Tunnels
Power Plants — Municipal Works

150 North Wacker Drive
Chicago 6, Ill.

79 McAllister Street
San Francisco 2, Calif.

Greeley and Hansen

Engineers

Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal

220 S. State Street, Chicago 4

Consult these Specialists:

Let them save your time by bringing their broad experience in their specialty to bear on your problems.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names

Additional cards on preceding pages

Harza Engineering Co.

Consulting Engineers

Calvin V. Davis — E. Montford Fuelk
Richard D. Harza

Hydroelectric Plants and Dams
Transmission Lines
Flood Control, Irrigation
River Basin Development
400 West Madison Street — Chicago 6

Kornacker & Assoc., Inc.

Engineers

Bridges, Highways & Railways, Building Structures, Foundations & Soils, Investigations & Reports, Sewerage.

53 West Jackson Blvd.
Chicago 4, Illinois

Hazelet & Erdal

CONSULTING ENGINEERS

Fixed Bridges, Movable Bridges, Industrial Plants, Expressways, Airports, Dams
Monadnock Block, Chicago 4, Ill.
Dixie Terminal Bldg., Cincinnati 2, O.
Commerce Bldg., Louisville 2, Ky.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Operations - - - Purchasing
Steam - - Hydraulic - - Gas
Public Utilities - - Industrials

231 So. La Salle St. — Chicago 4

Sargent & Lundy

ENGINEERS

Steam and Electric Plants
Utilities—Industrials
Studies—Reports—Design
Supervision
Chicago

Chas. W. Cole & Son

Sewerage, Sewage Treatment, Industrial Wastes, Water Supply, Water Treatment, Airports, Industrial Buildings.

Chas. W. Cole, Sr. — Chas. W. Cole, Jr.
Ralph J. Bushee, — M. J. McKitrick

220 W LaSalle, South Bend, Ind.

The Austin Company

Design and Construction

Manufacturing and Process Plants
Airports & Air Transport Buildings
Railroad Terminals and Facilities
Power Plants—Industrial & Institutional
Industrial Office Buildings and Laboratories
Reports and Plant Location Surveys

New York — CLEVELAND — Los Angeles
Chicago — Houston — Oakland
Detroit — Seattle

Havens and Emerson

W. L. Havens — C. A. Emerson
A. A. Burger — F. C. Tolles — F. W. Jones
H. H. Moseley — J. W. Avery
E. S. Ordway — F. S. Palcosky

Consulting Engineers

Water, Sewerage, Garbage, Industrial Wastes, Valuations—Laboratories

Leader Bldg. — Woolworth Bldg.
Cleveland 14 — New York 7

The Osborn Engineering Co.

DESIGNING-CONSULTING

Industrial Plants — Office Buildings
Stadiums — Grand Stands — Field Houses
Bridges — Garages — Laboratories

7016 Euclid Ave. — Cleveland 3, Ohio

Jones, Henry & Williams

Consulting Sanitary Engineers

Water Works, Sewerage & Treatment
Waste Disposal

Security Building — Toledo 4, Ohio

Toledo Testing Laboratory

Engineers—Chemists

Concrete — Soils — Asphalt
Inspection — Research
Tests — Development
Foundation Investigation
Borings — Diamond Drilling — Load Tests
Soils Mechanics Laboratory

1810 North 12th St. — Toledo 2, Ohio

Mead and Hunt, Inc.

Over 50 Years as Consulting Engineers

Electric Power Generation
Steam - Hydro - Diesel
Industrial Plants & Wastes
Water Supply & Sewerage
Airports, Highways & Parking

550 State St., Madison, Wisconsin

WEST OF MISSISSIPPI

Heron Engineering Co.

Consulting Engineers

For all types of Aerial Tramways, Cableways, and Suspended Structures

2000 South Acoma St.
Denver 19, Colorado

Stanley Engineering Company, *Consulting Engineers*

Airports - Drainage - Electric Power
Flood Control - Industrial - Rate Studies - Sewerage - Valuations - Water Works
Hershey Building — Muscatine, Ia.

CHECK this section whenever you need professional advice.

Black & Veatch

Consulting Engineers

Water - Sewage - Electricity - Industry Reports, Design, Supervision of Construction, Investigations, Valuation and Rates.

4706 Broadway, Kansas City 2, Mo.

Burns & McDonnell

Consulting and Designing Engineers

P. O. Box 7088, Kansas City 2, Mo.

1404 E. 9th St., Cleveland 14, Ohio

Harrington & Cortelyou

Consulting Engineers

Frank M. Cortelyou
E. M. Newman — F. M. Cortelyou, Jr.

Movable and Fixed Bridges of All Types, Foundations, and Related Structures.

1044 Baltimore — Kansas City 6, Mo.

Russell and Axon

Consulting Engineers

Civil — Sanitary — Structural
Industrial — Electrical
Rate Investigations

408 Olive St. — St. Louis 2, Mo.
Municipal Airport, Daytona Beach, Fla.

Sverdrup & Parcel, Inc.

Consulting Engineers

Bridges, Structures and Reports, Industrial and Power Plant Engineering.

Syndicate Trust Bldg., St. Louis 1, Mo.
220 Bush St., San Francisco 4, Calif.

Benham Engineering Co.

Established in 1909

Design and Construction Engineering Services for Water and Sewage—Highways and Structures—Airports—Power and Heating Plants

Suite 550 American National Building
Oklahoma City, Oklahoma

Quick

solutions to your technical problems are available through these consultants. Think first of the Professional Services Section of your publication when considering calling in an expert.

Lockwood & Andrews

Consulting Engineers

Airports, Paving, Industrial Plants, Drainage & Sewerage, Site Locations, Soils & Foundations, Water Supply, Structures, Harbor Works, Valuations, Reports — Design — Supervision

Union Nat'l Bank Bldg., Houston, Tex.

FAR WEST

International Engineering Company, Inc.

ENGINEERS

Investigations - Reports - Design
Procurement - Field Engineering
Domestic and Foreign
74 New Montgomery St.
San Francisco 5, California.

FOREIGN

Atlantic, Gulf and Pacific Company of Manila

Engineers
Design - Construction
Inquiries invited for work in the Philippines and Far East.
P. O. Box 626, Manila, Philippines
Cable Address: DREDGING Manila

The Foundation Engineering Company of Puerto Rico

Consulting Engineers

Foundation and Soil Mechanics Investigations, Laboratory analyses, reports and recommendations, design of structures, Supervision.

P. O. Box 821, San Juan, Puerto Rico

INSPECTION & TEST

Robert W. Hunt Company

Inspection and Testing of
Engineering Materials & Equipment

New York • Chicago • San Francisco
and other Principal Cities

Johnson Soils Engineering Laboratory

Foundation Design - Highway & Airport Pavements - Construction Control - Load Tests - Shear & Consolidation Tests - MOBILE LABORATORIES

132 West Shore Ave., Bogota, N. J.
Bogota-Hubbard 7-4408

Engineers Testing Laboratory, Inc.

Foundation and Soil Mechanics Investigations

Soil Borings — Laboratory Tests
Foundation Analyses — Reports
3313 Main St. — Houston, Texas

THIS SECTION is available to consulting engineers to contact prospective clients every week or every other week.

SEARCHLIGHT SECTION

This index is published as a convenience to the reader. Every care is taken to make it accurate but SEARCHLIGHT SECTION assumes no responsibility for errors or omissions.

Alberthaw Co. 164
Albert Pipe Supply Co., Inc. 164
Allied Construction Eq. Co. 161
Ambursen Dam Co. 163
American Air Compressor Corp. 163
Arabian American Oil Corp. 159
Atkinson Co., Guy F. 162

Caterpillar Tractor Co. 159
Columbia Construction Co., Inc. 163
Concrete Equipment Co. 164
Contractors Machinery Co. 162, 163
Crawford, William J. 161

Davidson Pipe Co., Inc. 164
Deatherage Pipe Co., Inc. 160
Defelice & Son, L. G. 161
Drachman Steel Corp., Hy. 162
Dyer Co., Inc., W. H. 162

Economy Forms Corp. 160
Forsythe Equipment Co., Inc. 161
Foster Co., L. B. 162
Frank, M. K. 162
Frantz Equipment Co. 164
Frazier-Davis Construction Corp. 163, 164

Gannett, Fleming, Corddry & Carpenter, Inc. 160
Gillis & Co. 162
Glazer Steel Corp. 161
Globe Pipe & Fitting Co. 164

Harrison's Service 161
Hennessey-Forrestal Mchy. Co. 161
Howard, Needles, Tammen & Bergendoff 159

Jaeger-Lambo Machine Corp. 160
Judge & Co., Inc., Frank M. 162

Louisville Cement Corp. 161

Madison, City of 159
Midwest Steel Corp. 162
Mississippi Valley Equipment Co. 162, 163

O'Neill, A. J. 163
Overly, H. M. 159

Pandolfo, S. F. 161
Peterson Construction Co., Inc. 161
Philligpi Equipment Co. 164

Seelye, Stevenson, Value & Knecht 159
Sherman Transfer Co., Roger 163, 164
Stone The Crane Man 163

Tamblyn System 160
Tractor & Equipment Co. 162
Vibro Equipment Co., Inc. 163

Walsh-Perini-Groves-Slattery Companies 163
West Virginia Turnpike Comm. 164
Wikstrom, Inc., A. S. 162
Williams Construction Co. 161, 163
Wilson Engineering Co. 160

Introducing the

"256" FORD INDUSTRIAL ENGINE

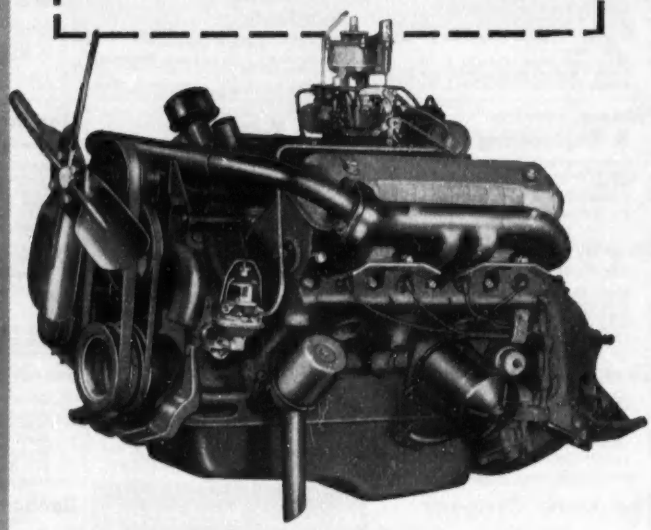
with
proven design features
far ahead of competition

- ★ GAS-SAVING LOW-FRICTION
- ★ HIGH (7.2 to 1) COMPRESSION
- ★ LARGE BORE (3.62) SHORT STROKE (3.1)
- ★ DEEP RIGID BLOCK

Ford
INDUSTRIAL ENGINES
AND POWER UNITS

Available as Closed Power Unit

HEAVY DUTY
V-TYPE, 8-CYL.
OVERHEAD-VALVE
256 CU. IN. DISPLACEMENT



This modern Ford "256" Heavy Duty Industrial Engine of the Overhead-Valve Type is designed to minimize the wasted horsepower that outmoded, long stroke engines lose because of excessive internal friction. The combination of high compression with large cylinder bore and short piston stroke serves to deliver *more* usable power on less gas. Also, short piston travel reduces wear and engine lasts longer!

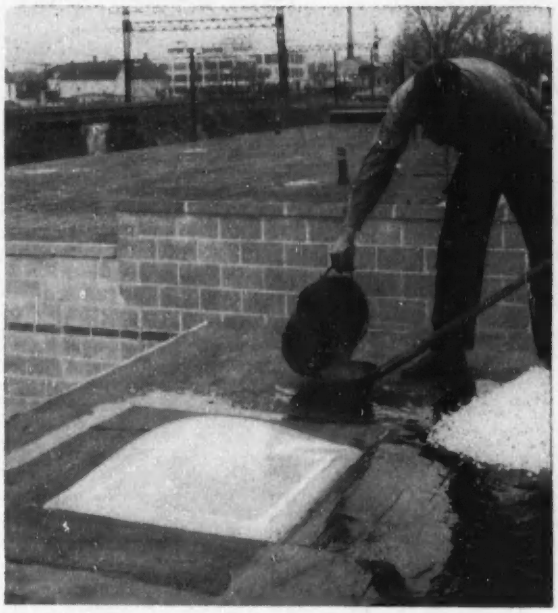
There are many modern design features worth looking into that contribute to more dependable, low cost operation. This engine is manufactured by modern methods utilizing Ford's revolutionary *automation* equipment which provides the user with a rugged, high-precision power plant. For all these reasons, the Ford "256" will out-perform any industrial gasoline engine of comparable displacement.

And remember, Ford offers a complete range of engines with the most advanced design at low first cost. Most important, too, is the fact that parts and service are available through Ford Dealers everywhere.

Phone or write today for a detailed 8-page folder giving complete specifications, power curves, detailed dimensional drawings, available accessories, etc., for this new Ford "256" Engine.

INDUSTRIAL ENGINE DEPARTMENT
FORD MOTOR COMPANY
15050 Woodward Avenue, Highland Park 3, Michigan

FORD FOR 12 WELL-POWERED WHEN IT'S FORD-POWERED



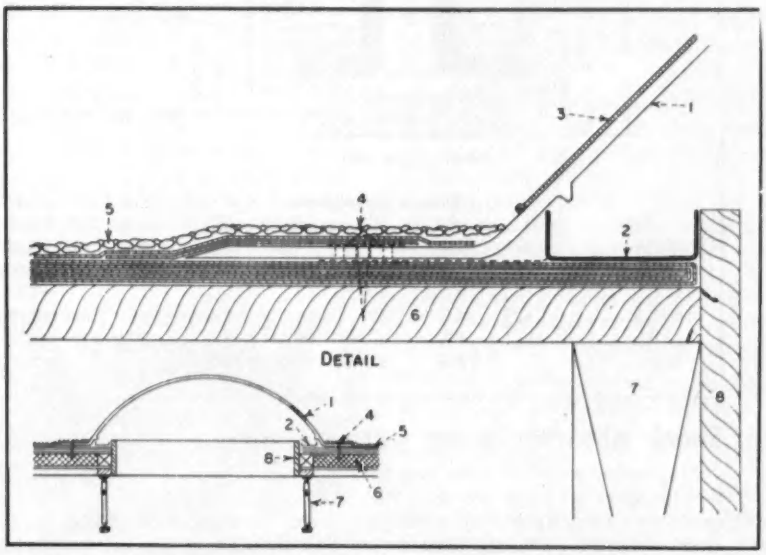
Plastic skylight installs easily

The new AP acrylic skylight is designed for use on any flat roof and, according to the manufacturer, installation of this simplified two-piece unit can be handled easily by the roofer. The dome itself is self-flashing and conflicting responsibilities are avoided because no other trades are involved in installation.

A sheet copper evaporation trough is placed in position and the plastic dome installed above. Screws are driven through holes in the dome flanges and the trough to secure the installation. Roofing material is then spread over the flanges and a protective coating over the plastic is peeled off. Attachment devices, screws, expansion bolts, bushings and washers are furnished to suit conditions of the installation.

The AP skylights are available in 11 sizes to fit standard roof joist spacings and roof openings. Minimum size is 16x16 in.; maximum is 48x72 in. The plastic material can be either clear or translucent white.

Because the flanges of the dome are imbedded in the roofing material, it is claimed that the maintenance problem is eliminated. Further, from a design standpoint, the skylight permits any configuration of the interior facia, such as circular, oval, sloped or stepped. The opening may be smaller than the skylight if desired and still appear as a simple, unobstructed aperture in the roof. ARCHITECTURAL PLASTICS, INC., 20 FITCH ST., E. NORWALK, CONN.



SKYLIGHT DETAILS—(1) Acrylic dome (2) Non-ferrous sheet metal evaporation trough (3) Strippable coating—removed after roofing (4) Screw, washer & bushing (5) Built-up roofing (6) Roofers or deck material (7) Framing member-joist (8) Interior facia

Bigger engines available for low-tonnage trucks

A new 145-hp V-8 engine is now available as optional equipment in Dodge ½, ¾ and 1-ton trucks for those buyers who require more horsepower and torque than that provided by the 110-hp 6 cyl standard engine.

Displacement of the new engine is 241.4 cu in.; compression ratio is 7.5:1. Maximum gross torque of 215 lb-ft is developed at 2,400 rpm.

According to the manufacturer, dome-shaped combustion chambers reduce operating costs by obtaining in-

(Continued on page 170)

SPEED
BULK MATERIAL
HANDLING
SCOOT-CRETE
BUILT FOR THE
TOUGH JOBS!

Scoot-Crete Model N-52, Pay Load, 3,000 lbs.

Scoot-Crete's heavy-duty, truck transmission stands up under the worst operating conditions; delivers maximum horsepower from the Wisconsin air-cooled engine to the heavy-duty, high-traction 7:50x10, 6-ply U.S. Royal tires. Scoot-Crete scoots 3,000 lb. loads up 25% grades, in plants and at construction sites, has caster steering—turns in its own 90" over-all length. Dump box body interchangeable with flat rack in a few minutes. Speeds, 1 to 15 mph. Model N-52 in 14, 16 cu. ft. capacities. Other Scoot-Crete models available in 8, 12, 20, 27 cu. ft. capacities. Also, available with Diesel Powered engine. Write today for specifications and performance facts.

GETMAN BROTHERS
Manufacturing Division
South Haven 2, Michigan

Steel Barges
Revolving Cranes
10 to 200 tons Capacity
Barge Mounted or on land
Stiff Leg and Guy Derricks
THE HAVRE DE GRACE SHIPYARD, INC.
Havre de Grace, Md.

Chain Sets
for Dragline Buckets

Page
WRITE FOR CATALOG
GENUINE REPAIR PARTS
CLEARING POST OFFICE • CHICAGO 38, ILL.

creased mileage from regular grades of gasoline. Further, power output is said to remain high throughout the life of the engine since the smooth contours of the combustion chamber minimize power loss due to carbon deposits. Dodge Div., Chrysler Corp., Detroit 31, Mich.

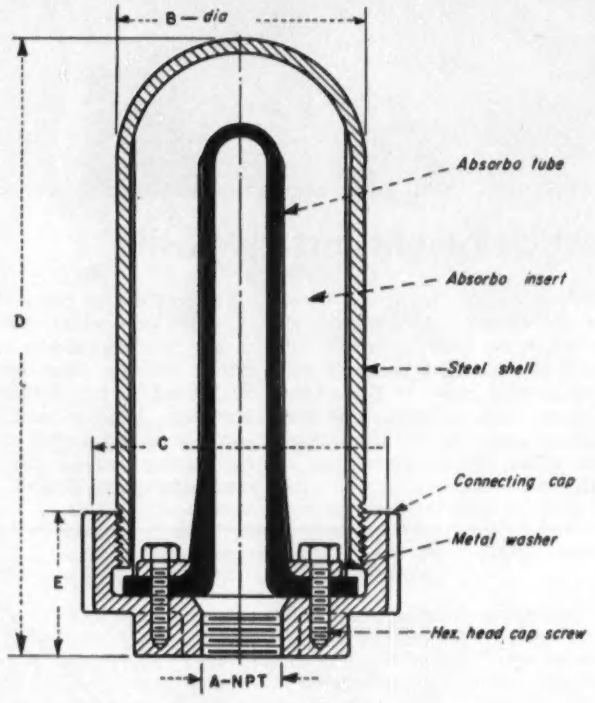
Portable gasoline-driven welder has 200-amp capacity

A new gasoline engine driven arc welder offers portability combined with a wide range of heats in a compact unit.

Power is supplied by a 2-cyl, air-cooled gasoline engine close coupled to the company-built welding generator. Control has been simplified by the use of plug-in stations and by a variable-speed engine covering a 20 to 200-amp range.

Designated the model WN-150, the welder weighs 425 lb and measures 45 in. overall and 20 in. in height. A two-wheel mounting is available. The unit has been designed with its weight kept low and dimensions small so that it can be jeep-mounted or carried with ease in small trucks. Harnischfeger Corp., 4601 National Ave., Milwaukee 46, Wis.

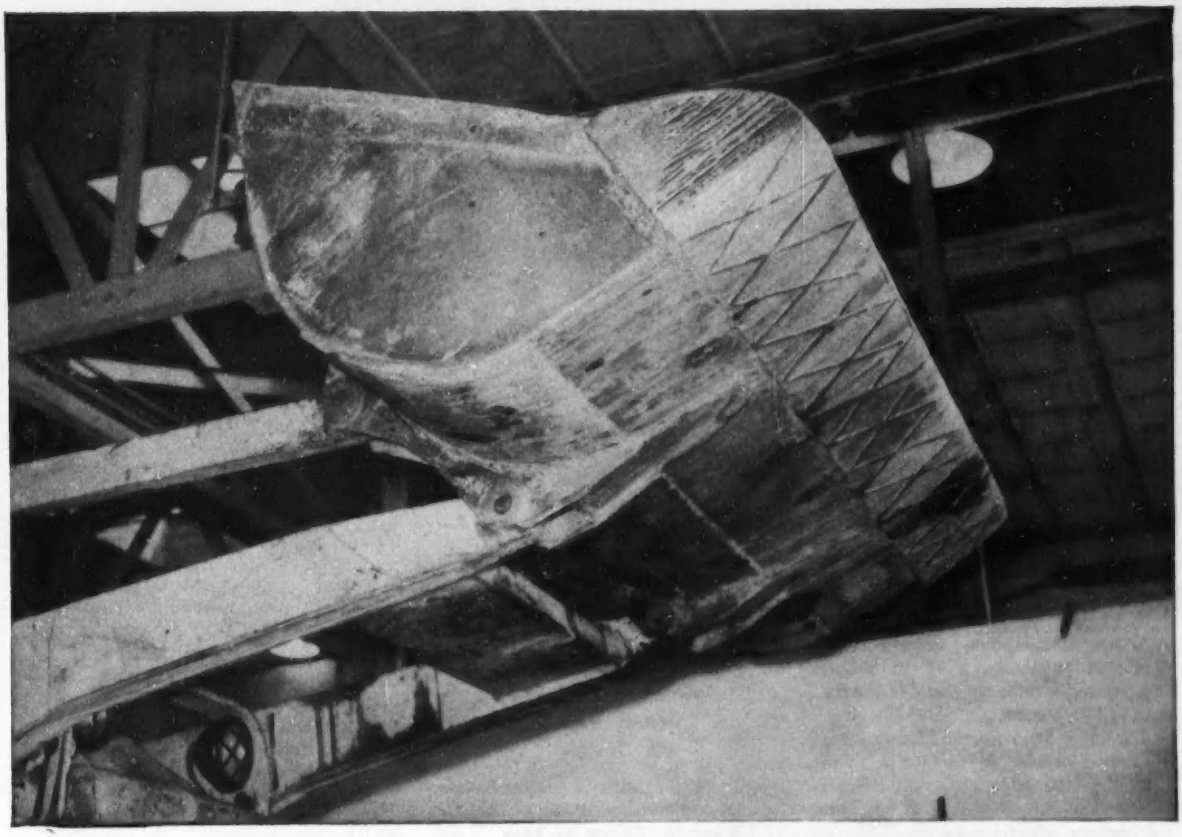
(New Products continued on page 172)



Type	Dimensions in inches A	B	C	D	E	Wgt. Lbs	List Price
1480½	½	3½	4	8⅞	2⅛	10	$25.00
1480¾	¾	3½	4	8⅞	2⅛	10	28.00
1481	1	4	4½	14	2¼	17	43.50
1481¼	1¼	4	4½	14	2¼	17	48.00
1481½	1½	4½	5	19½	2⅜	25	98.00
1482	2	4½	5	19½	2⅜	25	120.00

Shock absorber eases water hammer

A new relief device for water lines has been designed to absorb the shock imparted by moving water when a valve is closed suddenly. Although there are a number of similar units on the market, the new one is reported to have the advantage of longer operational life. The new shock absorber consists of a steel shell containing a flexible insert that surrounds an elastic tube. Surges in water lines are transmitted to the tube an insert which absorb the shock through elastic expansion and contraction. Josam Mfg. Co., Dept. X60, Michigan City, Ind.

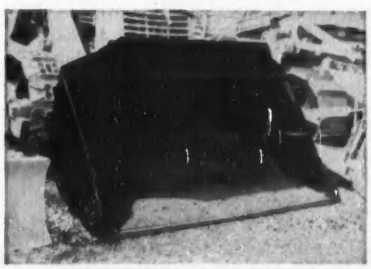


Hard-faced with Stoody 21 along the lip and side plates, this scoop holds size and load capacity. A self-sharpening lip makes it easy to load.

PROTECT THE LIP AND SAVE THE SCOOP
—A simple Stoody hard-facing procedure for loaders

Protecting scoop loaders from wear is a relatively simple hard-facing job. Results are generally two-fold; 1) The bucket holds original size, thus retaining full capacity and 2) lips become self-sharpening, insuring easier loading.

MANY TYPES—Although many scoop loaders are manufactured today, hard-facing procedures are similar on all. Wear usually concentrates along the bucket lip and extends up both inner and outer sides of the end plates. (Caution: Hardened steel lips as furnished by some manufacturers are not suitable for welding until surface hardening has been worn through.)



End plates are protected inside and out with a series of parallel stringers or cross-hatched beads of Stoody 21.

HARD-FACING DETAILS—A single ¾" wide band of Stoody 21, along the top edge of the lip, accomplishes two purposes:

It provides maximum wear protection for intense scuffing and abrasion against earth, paving materials, etc.

It makes the scoop self-sharpening by keeping the top surface from wearing as rapidly as the base metal.

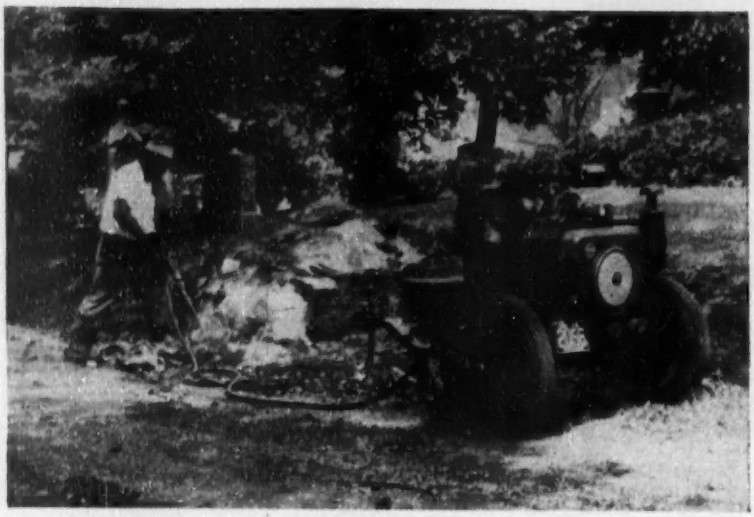
End plates are hard-faced by a series of parallel or cross-hatched stringers, both inside and outside and along the leading edge.

Replace severely worn lips with steel plate cut to size and hard-face as described above.

Stoody 21 is suggested for protecting scoop loaders because of its high abrasion resistance and impact strength. These two features are a direct result of high alloy content—yet Stoody 21 is a low cost electrode. This and other equipment-saving applications are described in the Stoody Guidebook. Ask your Stoody dealer for a copy (consult the "Yellow Pages" of your phone book) or write direct.

The scalloped edge on this scoop is a variation that has been found to give excellent results under some conditions. Note the hard-facing material along the edge.

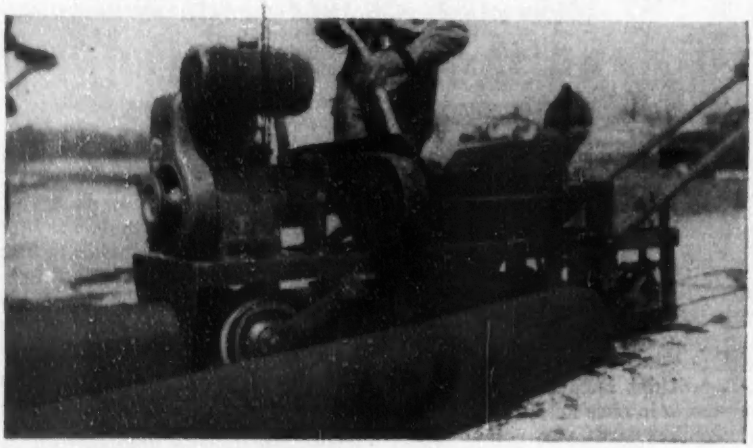
STOODY COMPANY
11972 East Slauson Avenue
Whittier, California



Portable compressor delivers 60 cfm

A new air compressor features a high degree of portability, a 55 to 60 cfm capacity and a price tag that's in the less-than-$1,500 bracket.

The unit is known as the Lindsay Model 55 and is capable of running a paving breaker in the 60-lb class or a rotating rock drill in the 30-lb class. With working pressures adjustable up to the 100 psi the compressor is also usable for spray painting and sandblasting. The gasoline engine used to power the compressor is rated at 20 hp at 1,900 rpm and fuel consumption is an estimated 10 to 15 gpd. Three types of Model 55: trailer-mounted with or without compressor housing and skid mounted. P. K. Lindsay Co., 97 Tileston St., Everett 49, Mass.



Automatic curber lays at 7½ fpm rate

A self-propelled curber has been designed to lay, compact and finish curbs at the rate of 7½ to 10 fpm. Interchangeable molding chambers permit the forming of either sloped or semi-circular shapes.

To place a bituminous concrete curb, a thin coat of liquid asphalt is first brushed along the predetermined line. The machine is aligned with this strip and the slip-form molding chamber lowered into place—within ¼ to ½ in. of the surface depending on roughness. The 6-hp gasoline engine is started, the clutch engaged and the asphalt mixture shoveled into the hopper.

A feed screw forces the material into the forming chamber and at the same time propels the machine. To provide adequate compaction in the forming chamber the operator applies a slight retardant pressure against the forward movement of the curber. However, this pressure is unnecessary on uphill work.

Either bituminous or portland cement concrete mixes may be used—recommended proportions are available from the manufacturer. The semi-circular molding chamber produces a 7x7-in. round-top curb, and the sloped curb has an 8-in. base and is 6 in. high.

The Stephens Curber is 96 in. long with handles and 27 in. wide. Detachment of the handles reduces the length to 65 in. Wall Mfg. Co., P. O. Box 5006, Ardmore Sta., Winston-Salem, N. C.

New pencil markings resist oil and moisture

A new blueprint pencil has been specifically designed for checking and marking on all blue or white prints and coarse tooth papers.

The specially formulated lead is said to give brilliant, insoluble color markings that are resistant to oil, moisture and dirt and grime. Further, it is reported that the lead does not reflect light and is opaque to provide "ghostless" reproductions.

Colors available are: green, yellow, vermillion, light blue, dark blue, white and black.

A free sampler is available on request. Address: American Lead Pencil Co., Hoboken, N. J.

Bearing hanger increases versatility of PTO's

A two-speed bearing hanger has been designed to increase the versatility of power take-offs for truck-mounted special equipment by adding a high speed reverse rotation to regular drives.

This feature is of special importance in winch operation since long lengths of cable can be payed out faster and more efficiently at the higher reverse speed than with the reverse speed of regular PTO's. A power take-off with one speed forward plus the bearing hanger provides two-speed reversed drive rotation, while a take-off with two speeds forward plus the bearing hanger provides four-speed reverse drive rotation.

If special equipment is mounted on a truck chassis as an after-thought or changed from one truck to another, the bearing hanger permits changing of the rotation of the truck power take-off drive to match the direction of rotation of the special equipment input shaft.

(*Continued on page 174*)

A Service

that knows no boundaries

From Alaska to Zamboanga and points North, East, South and West, wherever man has a need for water—there you will find Layne.

It's a typical American success story—this history that spans nearly three quarters of a century and started with a one man muscle power drilling rig—and an idea.

Today Layne is the name of a product—but it's more than that—much more. The name Layne is also the name of a service, international in scope, that includes every phase of ground water development from preliminary exploration to maintenance of installed equipment.

Where industry—agriculture—municipality—has any problem that relates to water, there is one organization that offers unbiased authoritative advice—plus the "know how" to solve the problem and keep it solved.

For information on any phase of ground water development, modernization, maintenance or equipment consult your nearest Layne Associate Company—or write

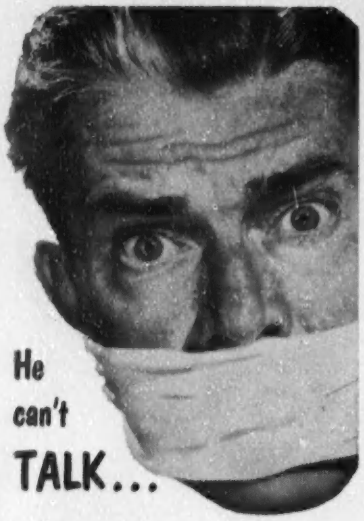
LAYNE & BOWLER, INC.
Memphis 8, Tennessee, U.S.A.

Layne Associate Companies Throughout the World

Layne

■ An informative booklet "Bulletin No. 100" will be sent free upon request.

Water Wells • Vertical Turbine Pumps • Water Treatment



(So we'll say it for him.) The ingenious new SMITH'S "Flo-Trol" design eliminates back-fire and prevents burned-out valve seats in Smith's oxy-acetylene cutting torches. It's fool-proof. You can't go wrong.

Write us a card —
we'll give you the facts.

SMITH WELDING EQUIPMENT CORPORATION
Dept. ENR-111 2633 S. E. 4th St. Minneapolis, Minn.

DRILLING CONTRACTORS
Diamond and Shot Core Borings
Dry Sample Borings
Grout Holes and Pressure Grouting
Foundation Testing for Bridges, Dams and other Heavy Structures

Manufacturers, also of Diamond Core Drilling Machines and complete accessory equipment, including all types of Diamond Drilling Bits. Ask for Bulletin 320.

SPRAGUE & HENWOOD, Inc.
Dept. E, Scranton 2, Penna.

UMECO TRANSITS 26X

Manufactured for UMECO in Japan to Standard American Specifications. Lowest Factory-to-you prices. Guaranteed Accuracy. Money-Back Guarantee.

Praised by Surveyors and Engineers. Ask to try one on Money-Back basis.

Two sizes: 5" and 5¾" Coated Lens. Complete with Collapsible tripod and Carrying Case.

Only UMECO offer this High Quality at these low prices.

Write for Descriptive Literature
UNION MERCANTILE COMPANY
465 California St. San Francisco 4, Calif.

Mounting flexibility of the bearing hanger allows it to be placed at the most convenient spot in the special equipment drive for easy installation. It can be mounted in a horizontal or vertical position and its drive shafts can face to the front or rear of the chassis as the application requires. Either of the two drive shafts can be used as the drive input shaft.

The unit is constructed of hardened steel, shaved gears that run in oil and rotate on ball bearings. Dimensions are 12 x 9⅞ x 7⅞ in. Weight is 36.9 lb. GAR WOOD, IND., WAYNE, MICH.

German joint sealer withstands jet tests

A new joint sealer has been developed that reportedly withstands the action of not only jet fuels but the intense heat of direct blast.

Non-bituminous, the sealer is similar to a thermosetting plastic in that it is applied while in an easily workable state at a temperature of from 320 to 356 F, yet withstands temperatures of 1,200 F after installation. According to the manufacturer, the compound is also resistant to acids and many other inflammables. Further, the material is said to have unusual binding qualities. In tests, the sealer has held firm while the concrete has cracked and given away. Other tests show that its workability remains good at 14 F.

Called Posselit, the compound is applied in the same manner as any other sealer—the only requirement is that it be melted in an oil or glycerine-imbedded kettle. "Double boilers" of an approved type are available through the manufacturer of the sealer. These double walled kettles are mounted on wheels and can melt about eight cans or 440 lb of the material.

Exact prices on the sealer are not determined at this point, but it is estimated that cost will be about 35¢ per lb. Although this is considerably higher than standard joint sealers, the manufacturer points out that the extreme life and other qualities make it a cheap long-term investment. WORLD MARKETING SERVICE, WESTINGHOUSE BLDG., 150 BROADWAY, NEW YORK 38, N. Y.

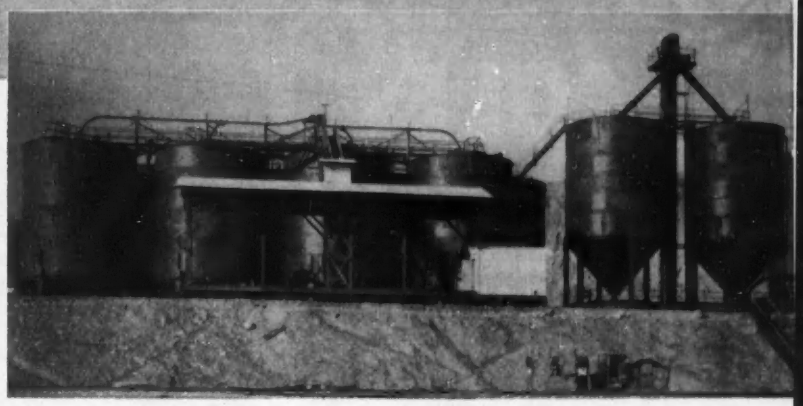
(*New Products continued on p.* 176)

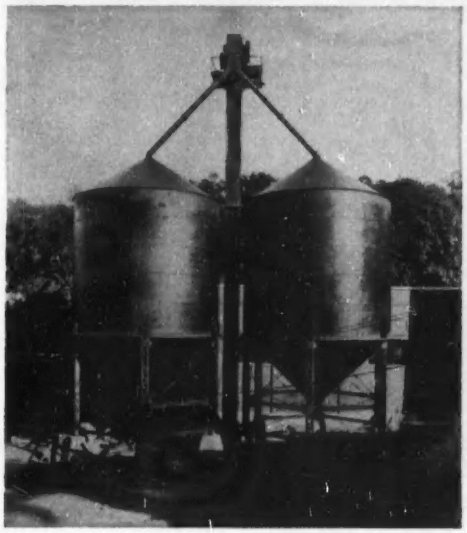
New tires offer improved flotation

In the testing stage is a new low-pressure, earthmover-type tire developed for use on heavy construction equipment. Bearing the descriptive designation of Wide Base Earth Mover, the new unit is constructed for a wider rim than present earthmover tires—25 in. instead of 17 in. The wider base is reported to result in superior flotation and thus permits faster, steadier operation of the vehicle. The tire is at present made in only two sizes, 29.5 x 25 and 29.5 x 29, replacing the company's 24.00 x 25 and 24.00 x 29 sizes. Either the Earth Mover Sure Grip or Hard Rock Lug tread designs are available. Prices of the new units will be slightly higher than the corresponding 24.00 sizes, but the manufacturer believes that actual cost per yard for hauling material on the wider base will be less. Goodyear Tire & Rubber Co., Akron 16, Ohio.

Steel BINS of every type

for ECONOMICAL
storage of
FREE-FLOWING
DRY MATERIALS





DESIGNED, FABRICATED
AND ERECTED BY

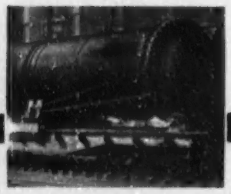
PITTSBURGH • DES MOINES

Resolve your materials-storage problem with job-engineered Pittsburgh-Des Moines Steel Bins—correct in type and size—expert in craftsmanship—with satisfaction guaranteed. *Write for quotations.*

PITTSBURGH • DES MOINES STEEL CO.
Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH (25) . . . . . 3414 Neville Island
NEWARK (2) . . . 216 Industrial Office Bldg.
CHICAGO (3), 1218 First National Bank Bldg.
LOS ANGELES (48), ... 6399 Wilshire Blvd.
DES MOINES (8), 915 Tuttle Street
DALLAS (1), 1219 Praetorian Bldg.
SEATTLE . . . . . 522 Lane Street
SANTA CLARA, CAL., 621 Alviso Road



TIMBER-TREATING CYLINDERS

• Whatever your need in pressure vessels — creosoting cylinders, bubble-towers, gas scrubbers, pressure spheres, gas storage tanks, etc.—you can depend on COLE for vessels that are correct in design and permanently leakproof at the welded or riveted joints.

We also design and fabricate elevated tanks, acid tanks, dye vats, digestors, standpipes, storage tanks, etc. Write for latest Cole catalog—"Tank Talk."

R. D. COLE MFG. CO.
NEWNAN, GA., Established 1854
TANKS • TOWERS • VESSELS
CYLINDERS

CORE DRILLING
SERVICE AND SUPPLIES
SOIL SAMPLING
GROUT HOLE DRILLING
A COMPLETE LINE OF DIAMOND CORE DRILLS, OPERATING EQUIPMENT AND DIAMOND BITS. SEND FOR BULLETIN 86 AND CATALOG 200.
E. J. Longyear CO.
MINNEAPOLIS
NEW YORK CITY SALT LAKE CITY

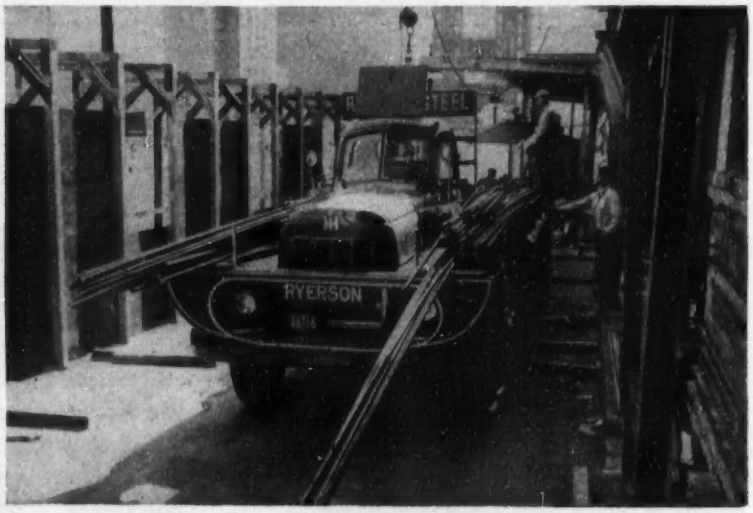
GUNITE
Since 1915
CONCRETE
SAND AND CEMENT
"Placed by Air"
We have the equipment, personnel and experience to complete any and all GUNITE work regardless of size or location.
Send for specifications and bulletins
No obligation
See our catalog in Sweets
GUNITE CONCRETE & CONST. CO.
1301 WOODSWETHER RD., KANSAS CITY 5, MO.
2016 W. WALNUT, CHICAGO 12, ILL.
2036 ADDISON, HOUSTON 25, TEXAS
St. Louis—Minneapolis—Denver—New Orleans

Crane gives trucks dual purpose

A new self-contained materials handling crane is said to convert any standard truck into a dual-purpose hauling and handling unit. The Truck-Crane will lift up to 5,000 lb at one time, yet takes up only 18 in. of space behind the truck cab.

The boom swings in a 280-deg arc and a traveling carriage spots the load anywhere within the 16-ft radius. The complete mechanism is hydraulic, with controls for boom, winch, carriage and stabilizing outriggers operable from control panels on both sides of the truck. One hand lever reverses, locks or operates the winch at the speed desired. For safety, all power movements lock automatically when levers are released.

Two models are available: The HB-50 with optional boom lengths up to 16 ft; the EB-50 equipped with a telescoping elevating boom with extensions up to 22 ft. TRUCK-CRANE, INC., 130TH & HALSTED ST., CHICAGO 27, ILL.



One-man cab allows longer loads

A one-man centered cab, permitting balanced carrying of lengths of steel, pipe or lumber, longer than the overall length of the truck, is now available as an attachment on medium and heavy-duty International 4 and 6-wheel trucks. The 50-in. cab allows a 21-in. wide carrying space on either side while still maintaining the legal width. A hatch in the roof permits access to the cab should the sides be blocked. International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

WET TRENCHES *Can't Slow Up . . .*

Tylox jointed PIPE JOBS

Tylox *Flexible* Rubber Gaskets Speed Construction and Make Pipe Lines "Leakproof for Life"

WHEN you specify TYLOX flexible rubber pipe jointing gaskets, you are assured of a line that's built faster because construction men lose no time worrying with mud or water in the trench. *Flexible* TYLOX seals mechanically, and compensates for angularities in the line. Neither *immediate* backfill, nor the presence of mud and water during jointing can affect this seal. The work *keeps* moving and your project finishes on or ahead of schedule, and — it's a leakproof job . . .

Unlike mortar or bituminous jointing materials, TYLOX does not depend upon adhesion to form a seal. TYLOX gaskets "pack" into the joint's annular space under *compression*, as the pipe is shoved home. It can never shrink away or crumble, leaving crevices for the entrance of ground water or roots.

And this compression seal lasts the life of the pipe line, because TYLOX is made of a rubber compound that *stays* flexible and doesn't deteriorate. Under ground, and under compression, TYLOX is virtually ageless.

On your next pipe project calling for tongue-and-groove or bell-and-spigot pipe, specify TYLOX jointing gaskets to speed construction and make the line "leakproof for life."

Write today for complete specification data and literature on TYLOX. Pipe Jointing Gaskets.

Making Joints with TYLOX RUBBER GASKETS is as simple as A B C

Cement tongue and snap on TYLOX gasket.

Lubricate sliding surfaces with TYLOX cement.

Shove the pipe home to line and grade.

1222

HAMILTON-KENT
MANUFACTURING CO.
KENT, OHIO
127 W. Grant St. ORchard 3-9333

"THE ONLY PERMANENTLY TIGHT LINES ARE LAID WITH RUBBER JOINTS"

Wherever structural steel is used, it can be an ALLIED job

for instance

The new GILMORE STREET BRIDGE AT JACKSONVILLE, FLORIDA

5000 Tons of steel in this modern bridge were fabricated in the three Allied plants and erected, on location, by Allied skilled erecting crews. The nearly perfect facility with which a large bridge like this has moved along surely demonstrates the advantages to contractors, architects, and engineers of having a flexible organization like Allied to count on.

On any job, large or small, where fabricated structural steel is used, send your plans and specifications to us to be estimated.

Plants in Chicago, Ill., Hammond, Ind., and Clinton, Iowa.

Fabricators and erectors of structural steel for highway and railroad bridges; industrial, office, school, and government buildings; airport structures; harbor facilities.

ADVERTISERS IN THIS ISSUE

Acker Drill Co. 146
Adams Mfg. Co. 73
Airtherm Mfg. Co. 104
Alemite Div., Stewart-Warner Corp. 153
Allied Structural Steel Cos. 178
Allis-Chalmers Mfg. Co. 1
Allison Engine Div., G.M.C. 135
American Bitumuls & Asphalt Co. 128
American Bridge Div., U. S. Steel Corp. 37
American Steel & Wire Div., U. S. Steel Corp. 98, 99

Armco Drainage & Metal Products, Inc. 18
Bailey Lewis Williams, Inc. 113
Barber-Greene Co. 6
Bethlehem Steel Co. 51
Buchanan Lumber Co. 140
Bucyrus-Erie Co. 106, 107
Butler Bin Co. 125
Butler Mfg. Co. 110

Cast Iron Pipe Research Assoc., Inc. 102, 103
Caterpillar Tractor Co. 80, 81
Ceco Steel Products Corp. 117
Cement Gun Company 129
Chain Belt Co. 62
Chevrolet Motor Div., General Motors Corp. 127
Chicago Bridge & Iron Co. ..... 2nd Cover
Chrysler Corp., Industrial Engine Div. 79
Clark Equipment Co., Construction Machinery Div. 61
Cleveland Crane & Engrg. Co. 66
Cole Mfg. Co., R. D. 176
Commercial Shearing & Stamping Co. . 35
Concrete Grinding Corp. 142
Concrete Reinforcing Steel Institute 133
Connors Steel Div., H. K. Porter Co. .. 129
Continental Motors Corp. 10

Deming Co., The 96
Dresser Mfg. Div., Dresser Industries .. 100

Erie Strayer Co. 132
Euclid Div., G.M.C. 4, 5

Flint Steel Corp. 139
Foote Const. Equip. Div., Blaw-Knox Co. 55
Ford Motor Co. 168
Fort Pitt Bridge Works 11
Frost, Jack A. 82

Gardner-Denver Co. 85, 87
Gateway Erectors, Inc. 150
General Electric Company Electronics Dept. 14
Getman Bros. 170
Greenberg Sons, M. 132
Griffin Wellpoint Corp. 30, 31
Grinnell Co., Inc. 71
Gulf Oil Corp. 105
Gunite Concrete & Const. Co. 176
Gunite Construction Corp. 142

Hamilton Kent Mfg. Co. 177
Harnischfeger Corp. 97
Haven Busch Co. 134
Havre de Grace Shipyard, Inc. 170
Hazard Wire Rope Div., American Chain & Cable Co. 13
Heltzel Steel Form & Iron Co. 145
Hendrix Mfg. Co. 59
Hyatt Bearings Div., G.M.C. 74

International Harvester Co. 89- 92
International Steel Co. 85

Jaeger Machine Co. 112
Jenkins Bros. 16
Johns-Manville Corp. 121
Joy Mfg. Co. 122

Kaiser Engineers Div., H. J. Kaiser Co. 88
Keasbey & Mattison Co. 65
Kinnear Mfg. Co. 150
Kirk & Blum Mfg. Co. 52
Koehring Co., The 76, 77
Koppers Co., Inc. 3

Layne & Bowler, Inc. 173
LeTourneau-Westinghouse Co. 118, 119
Leupold & Stevens Instruments, Inc. 114
Lexsuco, Inc. 109
Lincoln Electric Corp. 131
Link Belt Speeder Corp. 20
Longyear Co. 176
Lufkin Rule Co. 113

Mahon Co., R. C. 9
Marietta Concrete Corp. 88
Master Vibrator Co. 93
McDonough Steel Co. 108
McGraw-Hill Book Co. 69
McKiernan-Terry Corp. 122
Moretrench Corp. 12
Motorola, Inc. 39

Nat'l Clay Pipe Mfgrs., Inc. 49
National Surety Corp. 130

Page Engineering Co. 170
Patent Scaffolding Co. 124
Perlite Institute 58
Pittsburgh Coke & Chemical Co. 83
Pittsburgh-Des Moines Steel Co. 175

Raymond Concrete Pile Co. ..... 3rd Cover
Remington Arms Co., Inc. 141
Reynolds Metal Co., Inc. 143
Ric-Wil Co. 63
Rockford Clutch Div., Borg-Warner 114
Valdura Div., American Marietta Co. .. 64

St. Paul & Tacoma Lumber Co. 101
Salem Tool Co. 38
Sauerman Bros., Inc. 139
Schramm, Inc. 137
Servicised Products Corp. 134
Sika Chemical Corp. 140
Smith Welding Equip. Corp. 174
Sprague & Henwood, Inc. 174
Staedtler Co., J. S. 2
Stang Corp., J. W. 115
Stoody Company 171
Symons Clamp & Mfg. Co. 8

Taller & Cooper, Inc. 54
Terry Steel Contractors, Inc. 82
Thew Shovel Co., The 84
Timken Roller Bearing Co. ..... 4th Cover
Trailer Village, Inc. 140
Truscon Steel Company 68

Union Mercantile Co. 179
U. S. Steel Corp. 44, 45, 94, 95
Universal Concrete Pipe Co. 138
Universal Form Clamp Co. 123
Universal Manufacturing Corp. 70
Universal Sewer Pipe Corp. 57

Wellman Engineering Co. 15
White Co., David 78
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp. 7
Wolverine Tube Div. 147
Wrought Washer Mfg. Co. 111

Yeomans Brothers Co. 56

Professional services 165-167

SEARCHLIGHT SECTION
(Classified Advertising)
H. E. Hilty, Mgr.

Employment 159, 160, 161
Educational 160
Notices
Proposal 155, 156, 157, 158, 159
Equipment
(For Rent, Sale, Wanted) .. 161-164

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000
D. S. Robertson, Advertising Mgr.
Howard T. Olsen, Business Manager

ADVERTISING REPRESENTATIVES

New York, 36—330 W. 42 St.,
M. J. Storz, E. A. Callahan, Jr., S. Kennedy

Chicago, 11—520 No. Michigan Ave.,
L. H. Hunt, W. G. Payne

San Francisco, 4—68 Post St.,
R. E. Dorland

Philadelphia, 3—17th and Sansome Sts.,
A. B. Cozzens, D. G. Jensen

Cleveland, 15—Hanna Bldg.,
E. E. Duff, Jr.

Detroit, 26—Penobscot Bldg.,
J. A. Houghton

St. Louis, 8—Continental Bldg.,
B. F. Horn

Los Angeles, 17—1111 Wilshire Blvd.,
H. L. Keeler

Atlanta, 3—Rhodes-Haverty Bldg.,
W. D. Lanier

Dallas, 1—First National Bank Bldg.,
J. H. Cash

OTHER SALES OFFICES:

Pittsburgh, 22—738-39 Oliver Bldg.,
Boston, 16—350 Park Square Bldg.,
London, McGraw-Hill House

EDITORIALS

Who pays for utility changes?

ONE OF THE REPORTS called for by Congress in the Federal-Aid Highway Act of 1954 is to be made by the Secretary of Commerce on "the problems posed by necessary relocation and reconstruction of public utilities services resulting from highway improvements authorized under this act." This report is to be made to Congress not later than Feb. 1, 1955. It will include a review of state statutes regulating such changes and apportioning the costs.

Although the state statutes vary, it is widespread practice to place most or all of the cost of such changes on the owners of the utilities—water, gas, sewer, power and telephone. Because of the growing burden of these costs, the utility interests some time ago succeeded in having introduced in both houses of Congress legislation authorizing the federal government to pay the federal pro rata share of the cost of utility changes on all federal-aid highway projects. That legislation was before Congress at the time it was considering the new federal-aid highway bill. Instead of acting on the utilities bill, Congress put a requirement for a full study of the controversial issue in the highway act.

Logical arguments can be made for relieving the utilities of much of the expense placed on them by changes in their systems that are made necessary by new highways or highway reconstruction projects. At the Congressional hearings, instances were cited of small communities where costs of such changes in the water system amounted to half the annual net income of the utility.

But logical arguments also can be made for continuing to require utilities to carry a large part of the cost. For example, state highway engineers claim that relieving utilities of such costs would add materially to the cost of making changes in the utilities because the owners would be under no restraint when they came to specify what work is to be done.

In considering this controversial subject much depends on the point of view. For example, a special protective measure such as provision for access to a large water main under a major traffic artery may appear essential to the chief engineer of the water department of a town, whereas it may appear extravagant to the highway department engineer who notes that the same main passes under many older streets or highways without such protection. That in turn raises question as to what the highway department is willing or should pay to insure that a burst in the main does not tie up traffic on the superhighway.

Probably no single rule can be written that would be equitable in all instances or for all types of utilities. What seems more likely is that the Secretary of Commerce will propose a few general principles to be applied to cost apportionment under a variety of conditions. Inclusion of such provisions in future federal-aid highway acts would not, of course, bind the states to apply the same principles where they were not in harmony with local statutes. However, such a step would tend to develop more uniformity in local practices and would facilitate moves to correct inequities in the local statutes.

Relearning an old lesson

A SURPRISING FACT about the precautionary measures against the spread of fire that have been adopted by the General Motors Corp. as a result of the disastrous fire in its Livonia plant (ENR July 15, p. 28) is that with one or two possible exceptions, they are not new. Most of them originated as good practice a half century or more ago during the initial era of industrial expansion in this country. Subdivision of large areas by fire walls, extending walls above roofs to stop spread of fire there, installation of automatic fire doors, fire walls around shafts, automatic sprinklers, duplicate sources of water supply for fire fighting, and transfer of hazardous operations such as painting to separate buildings—all were standard practices in the early days of the current century when timber construction made the possibility of rapid spread of fire in a factory too obvious to be ignored.

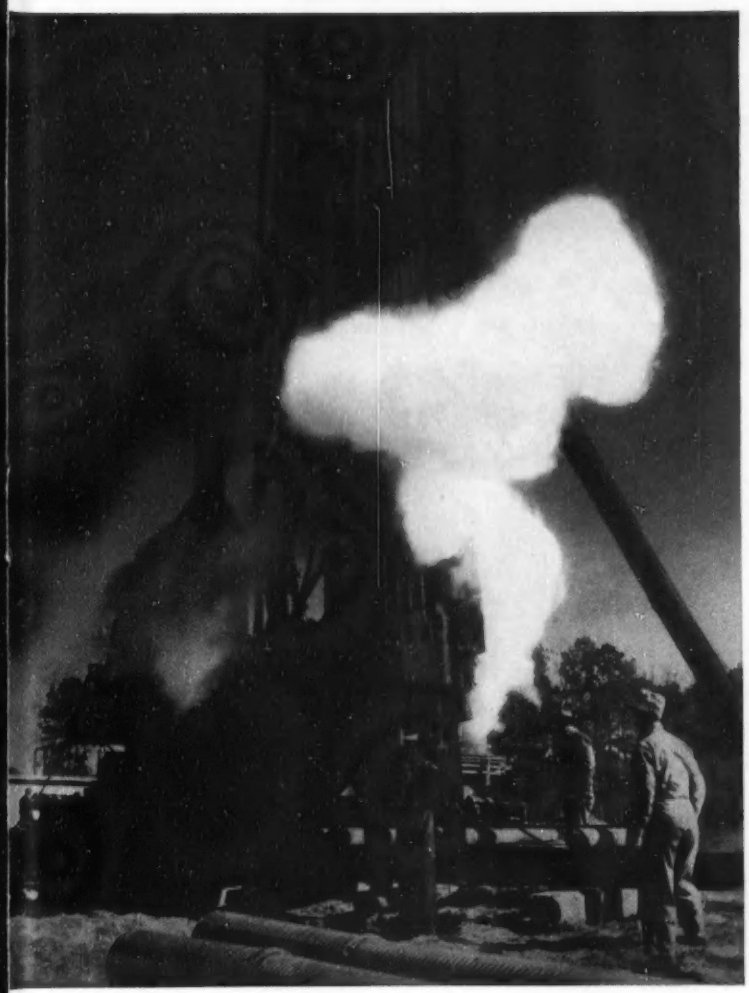
But the advent of steel framing and of roofing and siding of steel or other non-combustible materials brought a false sense of security. Walls interfered with production-line methods of manufacturing, and so open areas under a single roof have gradually expanded. Since all the structural materials used in the newer plants were non-combustible, designers questioned the need for continuing the precautionary measures developed to check the spread of fire in timber trusses and along the underside of lumber roof decks?

The General Motors plant fire, spreading with incredible speed through one and one-half million square feet of open factory area, answered that question in a costly and spectacular manner. Fire originating in a small quantity of inflammable material used in the manufacturing process spread to grease and oil on an overhead conveyor, which took fire and in turn melted pitch on the steel roof deck. The pitch ran down through the joints, adding to the fire that soon made a total wreck of a building constructed of non-combustible materials except for the roofing pitch.

Thus an old lesson was relearned at high cost to the General Motors Corp. and its insurers. The revised building practices adopted by the corporation indicate that it does not intend to get caught again. But what about the building codes under which the Livonia plant and many similar structures were built? Are they being revised to give recognition to the risks revealed by the Livonia fire?

Raymond SERVICES

GROW WITH CANADA



THE RAYMOND CONCRETE PILE COMPANY ANNOUNCES

the expansion of its Canadian subsidiary, Raymond Concrete Pile Company, Limited, to include heavy construction. In addition to soil investigation and foundation work, Raymond Concrete Pile Company, Limited now offers complete construction services on wharves, bulkheads, intake structures and bridges as well as the cement-mortar lining of pipelines in place.

The Canadian company, like all Raymond subsidiaries, is backed by our half century of foundation and construction experience . . . in the four corners of the earth.

THE MAIN OFFICES OF THE CANADIAN ORGANIZATION ARE AT 77 YORK STREET IN TORONTO WITH DISTRICT OFFICES IN VANCOUVER, B. C. AND MONTREAL, QUEBEC

YOUR INQUIRY IS INVITED

Raymond
CONCRETE PILE CO.

140 CEDAR STREET • NEW YORK 6, N. Y.

Concrete mixer drum turns smoothly on TIMKEN® bearings despite cement dust, sand and water

THE drum of this portable Jaeger 16-S Speedline mixer turns smoothly because Timken® tapered roller bearings on the drum shaft *roll* the load instead of slide it. As a result, the mixer runs smoother, lasts longer, requires less maintenance.

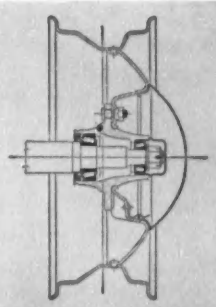
And although this 16-S Speedline mixer holds up to 2400 pounds of mix, none of the cement dust, sand and water it works in can get into the bearings. Reason: Timken tapered roller bearings hold shafts and housings concentric, making closures more effective. Lubricant stays *in*, dirt and water stay *out*.

There's no end-play in the drum shaft because Timken bearings are tapered—take *both* radial and thrust loads. They're also used in the wheel hubs of axle assemblies manufactured by the United Manufacturing Co.

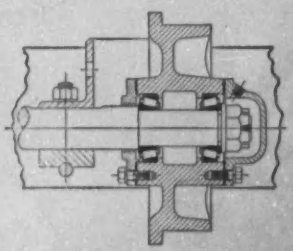
When the mixer is jouncing over rough terrain behind a truck, the Timken bearings take the shock loads with ease. Rollers and races are case-carburized to give them a tough, shock-resistant core under a hard, wear-resistant surface.

To get steel good enough for Timken bearings, we have to make our own. We're the only bearing maker in the U. S. who does. It's another reason to always specify Timken bearings for longer life, less friction, minimum maintenance. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".

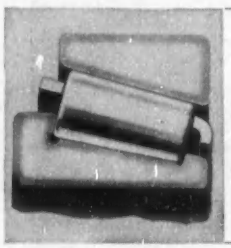
This symbol on a product means its bearings are the best.



How the **UNITED MANUFACTURING COMPANY** mounts the wheel hubs on axle assemblies using Timken tapered roller bearings to take the heavy shock loads.



How **JAEGER MACHINE COMPANY** mounts the drum roller shaft of its 16-S Speedline Mixer on Timken tapered roller bearings for longer life, less maintenance.



GREATER LOAD AREA

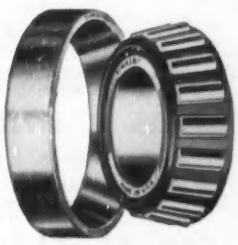
Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis Timken steels.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ◯ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ⬭ AND THRUST →⬭← LOADS OR ANY COMBINATION ✳